



CITY OF PORTLAND ENVIRONMENTAL SERVICES



1120 SW Fifth Avenue, Room 1000, Portland, Oregon 97204 ■ Nick Fish, Commissioner ■ Michael Jordan, Director

Memorandum

Date: October 12, 2018
To: Dan Hafley, Oregon DEQ
Cc: Doug Wise, Shawn Roberti, John O'Donovan, Taryn Meyer
From: Bryan Allen, BES
RE: Fire Station 2: Preliminary Results from Round 1 Groundwater Analysis. ECSI 6267

Introduction

The City of Portland's Bureau of Environmental Services (BES), Coordinated Site Analysis (CSA) Program, completed the first round of the groundwater sampling and analysis in accordance with the Reconnaissance PFAS Sampling Plan at Fire Station 2 (RPSP) for the Portland Fire Bureau. The purpose of this summary is to provide results from the first round of sampling and analysis as well as details on the monitoring well construction and encountered site conditions.

Well Construction and Development

Monitoring wells were installed with the use of a CME-75 truck mounted hollow stem auger drill and a Longyear LS250 track mounted Sonic drill rig that are both owned and operated by Cascade Environmental Inc. Encountered subsurface conditions include a 5-foot-thick layer of soil and silty-sand above a cobble and gravel layer extending to a minimum depth of 40 feet below ground surface (bgs). Refusal with the CME-75 occurred at 22.70 and 22.54 feet bgs for monitoring wells MW-1 and MW-3 respectively. Drilling at MW-2 with the CME-75 was attempted but owing to equipment damage and difficult drilling conditions was terminated at a depth of 8 feet. The installation of monitoring wells MW-2 and MW-4 recommenced with the LS250 sonic drill rig. Details of the monitoring wells are summarized in Table 1.

Well development was performed in accordance with procedures detailed in Section 3.2.2 of the RPSP. Well development consisted of pumping groundwater with a Vacmasters Air Knife/Vacuum truck, owned and operated by Stratus Corporation, until fine sediment particles had been removed. Monitoring of water quality parameters pH, conductivity, total suspended solids, and turbidity occurred approximately every 13 gallons. Development was considered complete when values converged to within the parameter stabilization goals set forth in Table 4 of the RPSP.

Table 1. Summary of monitoring well details.

Well ID	Depth to Well Bottom (feet)	Depth to Groundwater (feet)	Screen Range Depth (feet)
MW-1	22.70	15.20	12.5 – 22.5
MW-2	30.47	16.63	15 - 30
MW-3	22.54	16.35	12.5 – 22.5
MW-4	40.22	30.07	25 - 40

Sampling and Analysis

Groundwater sampling was performed in accordance with the procedures detailed in Section 3.3 of the RPSP. Prior to and during groundwater sampling water level measurements were taken. Groundwater sampling was collected with the use of a submersible Proactive Environmental 12-volt SS Hurricane pump using HDPE tubing following well purging. Purge water was directed through a flow cell and monitored using Horiba U-52 multiparameter water quality meter. Purging was considered complete when values of water quality parameters converged within tolerances set forth in Table 4 of the RPSP.

All groundwater samples were analyzed for Total Petroleum Hydrocarbons Dx (TPH-Dx), Polycyclic Aromatic Hydrocarbons (PAHs), Total and Dissolved Metals (As, Ba, Cd, Cr, Hg, Pb, Se, Ag, Cu, Ni, and Zn), Volatile Organic Compounds (VOCs), Total Organic Compounds, and PFAS (Table 1 in RPSP). These analytes were selected based upon the conclusions drawn within the RPSP.

Sampling personnel donned clean Nitrile gloves and avoided known PFAS-containing products to collect each sample. Each groundwater sample was placed in two 8-oz HDPE sample containers and capped with a Teflon-free lid. Sample containers were placed in an ice chilled container for delivery to the City of Portland Water Pollution Control Laboratory (WPCL) under chain of custody for analysis. Filtration for dissolved metals occurred in the laboratory within 24 hours of sample receipt.

Analytical Results

Groundwater sample results were screened against the USEPA's Lifetime Health Advisory (LHA) of 70 nanograms per liter (ng/L, equivalent to parts per trillion [ppt]) for PFAS and Oregon DEQ Risk-Based Concentrations for Ingestion & Inhalation from Tap Water Residential Receptor Scenario. Laboratory reports are provided in the Appendix. Sample locations are shown on Figure 1. The results are detailed below.

PFAS

PFAS analytes were detected in all monitoring wells. Concentrations are summarized in Table 2 with exceedances of the USEPA's Lifetime Health Advisory highlighted in red.

Table 2. Summary of PFAS analyte concentrations.

	MW1-001	MW2-001	MW3-001	MW4-001	Duplicate MW3 (MW5-001)	MW1 Rinsate Blank	Field Blank	US EPA
Collection Date	08/03/18 15:15	08/03/18 13:34	08/03/18 15:45	08/03/18 10:48	08/03/18 15:45			
Lab Sample ID	W18H036 -01	W18H036 -02	W18H036 -03	W18H036 -04	W18H036 -05			Lifetime HA (ng/L)
PFOS (Perfluorooctanesulfonic Acid (ng/L))	160	68	1600	31	1500	ND	ND	70
PFOA (Perfluorooctanoic Acid (ng/L))	18	14	74	12	73	ND	ND	70
PFHxS (Perfluorohexanesulfonic Acid (ng/L))	70	14	630	6.6	660	ND	ND	
PFBS (Perfluorobutanesulfonic Acid (ng/L))	12	5.5	76	4.5	78	ND	ND	
PFNA (Perfluorononanoic Acid (ng/L))	1.4 ¹	3.2 ¹	3.4 ¹	ND	2.4 ¹	ND	ND	
PFHpA (Perfluoroheptanoic Acid (ng/L))	7.9	4 ¹	48	3.8 ¹	50	ND	ND	
PFDS (Perfluorodecane Sulfonate (ng/L))	ND	ND	ND	ND	ND	ND	ND	
PFTeDA (Perfluorotetradecanoic acid) (ng/L)	ND	ND	ND	ND	ND	ND	ND	
PFTrDA (Perfluoro-n-tridecanoic acid (ng/L))	ND	ND	ND	ND	ND	ND	ND	
PFDoA (Perfluorododecanoic Acid (ng/L))	ND	ND	ND	ND	ND	ND	ND	
PFUnA (Perfluoroundecanoic Acid (ng/L))	ND	ND	ND	ND	ND	ND	ND	
PFDA (Perfluorodecanoic Acid (ng/L))	1.2 ¹	0.78 ¹	1.9 ¹	0.68 ¹	1.8 ¹	ND	ND	
PFHxA (Perfluorohexanoic Acid (ng/L))	26	12	230	7.2	260	ND	ND	
PFPeA (Perfluoropentanoic Acid (ng/L))	11	5.8	100	4.9	110	ND	ND	
PFBA (Perfluorobutanoic Acid (ng/L))	6 ¹	4.1 ¹	42	3.3 ¹	44	ND	ND	
FOSA (Perfluorooctane sulfonamide (ng/L))	2.4 ¹	ND	4.4	ND	4.1 ¹	ND	ND	
6:2 (Fluorotelomer sulfonate (ng/L))	8.1	ND	190	ND	190	ND	ND	
8:2 (Fluorotelomer sulfonic acid (8:2 FTS) (ng/L))	8.7	ND	41	ND	39	ND	ND	
MeFOSA (N-methylperfluoro-1- octanesulfonamide (ng/L))	ND	ND	ND	ND	ND	ND	ND	
PFHpS (Perfluoroheptane sulfonate (ng/L))	3.9 ¹	2 ¹	42	0.91 ¹	42	ND	ND	
EtFOSA (N-ethylperfluoro-1- octanesulfonamide (ng/L))	ND	ND	ND	ND	ND	ND	ND	
MeFOSE (2-(N-methylperfluoro-1- octanesulfonamido)-ethanol(ng/L))	ND	ND	ND	ND	ND	ND	ND	
EtFOSE (2-(N-ethylperfluoro-1- octanesulfonamido)-ethanol (ng/L))	ND	ND	ND	ND	ND	ND	ND	

Results below MRL reporting as ND; ‘-’ indicates unavailable value. Values that exceed US EPA Lifetime Health Advisory concentration highlighted in red. ‘¹’ The result is an estimated value.

Total Metals

Arsenic, barium, chromium, and copper were detected in all monitoring wells. Nickel was detected in all but MW-2 and zinc was detected in MW-1 & MW-4. Arsenic concentrations for all samples exceed applicable DEQ RBCs. All other detected concentrations do not exceed DEQ RBCs. Results are summarized in Table 3.

Table 3. Summary of Total Metal concentrations.

	MW1-001	MW2-001	MW3-001	MW4-001	Duplicate MW3 (MW5-001)	DEQ RBC
Collection Date	08/03/18 15:15	08/03/18 13:34	08/03/18 15:45	08/03/18 10:48	08/03/18 15:45	Residential groundwater ingestion & inhalation (ug/L)
Lab Sample ID	W18H036-01	W18H036-02	W18H036-03	W18H036-04	W18H036-05	
Arsenic (ug/L)	0.711	0.897	0.884	0.775	0.918	0.052
Barium (ug/L)	11	7.58	10.1	10.1	10.6	4000
Cadmium (ug/L)	ND	ND	ND	ND	ND	20
Chromium (ug/L)	0.315	0.363	0.466	0.366	0.528	30000
Copper (ug/L)	0.312	0.229	0.288	0.38	0.354	-
Lead (ug/L)	ND	ND	ND	ND	ND	15
Mercury (ug/L)	ND	ND	ND	ND	ND	6
Nickel (ug/L)	1.01	ND	0.494	0.613	0.499	400
Selenium (ug/L)	ND	ND	ND	ND	ND	-
Silver (ug/L)	ND	ND	ND	ND	ND	100
Zinc (ug/L)	0.602	ND	ND	0.717	0.545	-

Results below MRL reporting as ND; '-' indicates unavailable value. Values that exceed DEQ RBC receptor scenario are highlighted in red.

Dissolved Metals

Arsenic, barium, and chromium were detected in all monitoring wells. Copper was detected in all but MW-2 and nickel and zinc were detected in MW-1 & MW-4. Arsenic concentrations for all samples exceed applicable DEQ RBCs. All other detected concentrations do not exceed DEQ RBCs. Results are summarized in Table 4.

Table 4. Summary of Dissolved Metal concentrations.

	MW1-001	MW2-001	MW3-001	MW4-001	Duplicate MW3 (MW5-001)	DEQ RBC
Collection Date	08/03/18 15:15	08/03/18 13:34	08/03/18 15:45	08/03/18 10:48	08/03/18 15:45	Residential groundwater ingestion & inhalation (ug/L)
Lab Sample ID	W18H036-01	W18H036-02	W18H036-03	W18H036-04	W18H036-05	
Arsenic (ug/L)	0.701	0.931	0.853	0.797	0.851	0.052
Barium (ug/L)	10.7	7.51	10	9.42	9.7	4000
Cadmium (ug/L)	ND	ND	ND	ND	ND	20
Chromium (ug/L)	0.294	0.356	0.359	0.254	0.362	300000
Copper (ug/L)	0.243	ND	0.223	0.232	0.223	-
Lead (ug/L)	ND	ND	ND	ND	ND	15
Mercury (ug/L)	ND	ND	ND	ND	ND	6
Nickel (ug/L)	0.969	ND	ND	0.581	ND	400
Selenium (ug/L)	ND	ND	ND	ND	ND	-
Silver (ug/L)	ND	ND	ND	ND	ND	100
Zinc (ug/L)	0.955	ND	ND	0.776	0.639	-

Results below MRL reporting as ND; '-' indicates unavailable value. Values that exceed DEQ RBC receptor scenario are highlighted in red.

Hydrocarbons

Diesel or Lube Oil range hydrocarbons were not detected in any monitoring wells. All samples underwent silica gel clean-up.

Table 5. Summary of Hydrocarbon concentrations.

	MW1-001	MW2-001	MW3-001	MW4-001	Duplicate MW3 (MW5-001)	DEQ RBC
Collection Date	08/03/18 15:15	08/03/18 13:34	08/03/18 15:45	08/03/18 10:48	08/03/18 15:45	Residential groundwater ingestion & inhalation (ug/L)
Lab Sample ID	W18H036-01	W18H036-02	W18H036-03	W18H036-04	W18H036-05	
Lube oil (mg/L)	ND	ND	ND	ND	ND	-
Diesel (mg/L)	ND	ND	ND	ND	ND	100

Results below MRL reporting as ND; '-' indicates unavailable value. Values that exceed DEQ RBC receptor scenario are highlighted in red.

Total Organic Carbon

Total Organic Carbon (TOC) was **not** detected in any monitoring wells.

Table 6. Summary of TOC concentrations.

	MW1-001	MW2-001	MW3-001	MW4-001	Duplicate MW3 (MW5-001)	DEQ RBC
Collection Date	08/03/18 15:15	08/03/18 13:34	08/03/18 15:45	08/03/18 10:48	08/03/18 15:45	Residential groundwater ingestion & inhalation (ug/L)
Lab Sample ID	W18H036-01	W18H036-02	W18H036-03	W18H036-04	W18H036-05	
TOC (mg/L)	ND	ND	ND	ND	ND	-

Results below MRL reporting as ND; '-' indicates unavailable value. Values that exceed DEQ RBC receptor scenario are highlighted in red.

Polycyclic Aromatic Hydrocarbons

Polycyclic Aromatic Hydrocarbons (PAHs) were **not** detected in any monitoring wells.

Table 7. Summary of PAH concentrations. Values that exceed DEQ RBC receptor scenario are highlighted in red.

	MW1-001	MW2-001	MW3-001	MW4-001	Duplicate MW3 (MW5-001)	DEQ RBC Residential Groundwater
Collection Date	08/03/18 15:15	08/03/18 13:34	08/03/18 15:45	08/03/18 10:48	08/03/18 15:45	Ingestion & Inhalation from Tapwater (ug/L)
Lab Sample ID	W18H036-01	W18H036-02	W18H036-03	W18H036-04	W18H036-05	
Pyrene (ug/L)	ND	ND	ND	ND	ND	110
Dibenzo(a,h)anthracene (ug/L)	ND	ND	ND	ND	ND	0.025
Fluoranthene (ug/L)	ND	ND	ND	ND	ND	-
Benzo(g,h,i)perylene (ug/L)	ND	ND	ND	ND	ND	-
Benzo(b)fluoranthene (ug/L)	ND	ND	ND	ND	ND	0.25
Benzo(k)fluoranthene (ug/L)	ND	ND	ND	ND	ND	-
Fluorene (ug/L)	ND	ND	ND	ND	ND	280
Naphthalene (ug/L)	ND	ND	ND	ND	ND	0.17
Indeno(1,2,3-cd)pyrene (ug/L)	ND	ND	ND	ND	ND	-
Anthracene (ug/L)	ND	ND	ND	ND	ND	-
Acenaphthylene (ug/L)	ND	ND	ND	ND	ND	-
Chrysene (ug/L)	ND	ND	ND	ND	ND	-
Acenaphthene (ug/L)	ND	ND	ND	ND	ND	510
Benzo(a)pyrene (ug/L)	ND	ND	ND	ND	ND	0.025
Benzo(a)anthracene (ug/L)	ND	ND	ND	ND	ND	0.030
Phenanthrene (ug/L)	ND	ND	ND	ND	ND	-

Results below MRL reporting as ND; '-' indicates unavailable value.

Volatile Organic Compounds (VOCs)

Chloroform and Tetrachloroethene (PCE) **were** detected in all monitoring wells. Concentrations of chloroform for all samples exceed the most conservative DEQ Risk-Based Concentrations (RBCs) value for the Residential Scenario for Groundwater Pathway for Ingestion & Inhalation from Tapwater. Concentrations for PCE did not exceed any values of RBC receptor scenarios. Results are summarized in Table 5 with exceedances highlighted in red.

Table 8. Summary of VOC concentrations.

	MW1-001	MW2-001	MW3-001	MW4-001	Duplicate MW3 (MW5-001)	MW1 Rinsate Blank	Field Blank	DEQ RBC
Collection Date	08/03/18 15:15	08/03/18 13:34	08/03/18 15:45	08/03/18 10:48	08/03/18 15:45			Residential groundwater ingestion & inhalation (ug/L)
Lab Sample ID	W18H036-01	W18H036-02	W18H036-03	W18H036-04	W18H036-05			
1,1,1,2-Tetrachloroethane (ug/L)	ND	ND	ND	ND	ND	ND	ND	-
1,1,1-Trichloroethane (ug/L)	ND	ND	ND	ND	ND	ND	ND	8000
1,1,2,2-Tetrachloroethane (ug/L)	ND	ND	ND	ND	ND	ND	ND	-
1,1,2-Trichloroethane (ug/L)	ND	ND	ND	ND	ND	ND	ND	0.28
1,1-Dichloroethane (ug/L)	ND	ND	ND	ND	ND	ND	ND	2.8
1,1-Dichloroethene (ug/L)	ND	ND	ND	ND	ND	ND	ND	2.8
1,1-Dichloropropene (ug/L)	ND	ND	ND	ND	ND	ND	ND	-
1,2,3-Trichlorobenzene (ug/L)	ND	ND	ND	ND	ND	ND	ND	-
1,2,3-Trichloropropane (ug/L)	ND	ND	ND	ND	ND	ND	ND	-
1,2,4-Trichlorobenzene (ug/L)	ND	ND	ND	ND	ND	ND	ND	-
1,2,4-Trimethylbenzene (ug/L)	ND	ND	ND	ND	ND	ND	ND	54
1,2-Dibromo-3-chloropropane (ug/L)	ND	ND	ND	ND	ND	ND	ND	-
1,2-Dibromoethane (ug/L)	ND	ND	ND	ND	ND	ND	ND	-
1,2-Dichlorobenzene (ug/L)	ND	ND	ND	ND	ND	ND	ND	300
1,2-Dichloroethane (ug/L)	ND	ND	ND	ND	ND	ND	ND	-
1,2-Dichloropropane (ug/L)	ND	ND	ND	ND	ND	ND	ND	-
1,3,5-Trimethylbenzene (ug/L)	ND	ND	ND	ND	ND	ND	ND	59
1,3-Dichlorobenzene (ug/L)	ND	ND	ND	ND	ND	ND	ND	-
1,3-Dichloropropane (ug/L)	ND	ND	ND	ND	ND	ND	ND	-
1,4-Dichlorobenzene (ug/L)	ND ²	ND ²	ND ²	ND ²	ND ²	ND ²	ND ²	0.48
2,2-Dichloropropane (ug/L)	ND	ND	ND	ND	ND	ND	ND	-
2-Butanone (ug/L)	ND	ND	ND	ND	ND	ND	ND	-
2-Chlorotoluene (ug/L)	ND	ND	ND	ND	ND	ND	ND	-
2-Hexanone (ug/L)	ND	ND	ND	ND	ND	ND	ND	-
4-Chlorotoluene (ug/L)	ND	ND	ND	ND	ND	ND	ND	-
4-Isopropyltoluene (ug/L)	ND	ND	ND	ND	ND	ND	ND	-

Table 9. Summary of VOC concentrations.

4-Methyl-2-pentanone (MIBK) (ug/L)	ND	ND	ND	ND	ND	ND	ND	-
Acetone (ug/L)	ND	ND	ND	ND	ND	ND	ND	-
Benzene (ug/L)	ND	ND	ND	ND	ND	ND	ND	0.46
Bromobenzene (ug/L)	ND	ND	ND	ND	ND	ND	ND	-
Bromochloromethane (ug/L)	ND	ND	ND	ND	ND	ND	ND	-
Bromodichloromethane (ug/L)	ND	ND	ND	ND	ND	ND	ND	0.13
Bromoform (ug/L)	ND	ND	ND	ND	ND	ND	ND	3.3
Bromomethane (ug/L)	ND	ND	ND	ND	ND	ND	ND	7.5
Carbon disulfide (ug/L)	ND	ND	ND	ND	ND	ND	ND	-
Carbon tetrachloride (ug/L)	ND	ND	ND	ND	ND	ND	ND	0.46
Chlorobenzene (ug/L)	ND	ND	ND	ND	ND	ND	ND	77
Chloroethane (ug/L)	ND	ND	ND	ND	ND	ND	ND	21000
Chloroform (ug/L)	1.29	1.35	1.47	1.54	1.37	ND	ND	0.22
Chloromethane (ug/L)	ND	ND	ND	ND	ND	ND	ND	190
cis-1,2-Dichloroethene (ug/L)	ND	ND	ND	ND	ND	ND	ND	36
cis-1,3-Dichloropropene (ug/L)	ND	ND	ND	ND	ND	ND	ND	-
Dibromochloromethane (ug/L)	ND	ND	ND	ND	ND	ND	ND	-
Dibromomethane (ug/L)	ND	ND	ND	ND	ND	ND	ND	-
Dichlorodifluoromethane (ug/L)	ND	ND	ND	ND	ND	ND	ND	-
Ethylbenzene (ug/L)	ND	ND	ND	ND	ND	ND	ND	1.5
Hexachlorobutadiene (ug/L)	ND	ND	ND	ND	ND	ND	ND	-
Isopropylbenzene (ug/L)	ND	ND	ND	ND	ND	ND	ND	440
m,p-Xylene (ug/L)	ND	ND	ND	ND	ND	ND	ND	-
Methylene chloride (ug/L)	ND	ND	ND	ND	ND	ND	ND	-
Naphthalene (ug/L)	ND	ND	ND	ND	ND	ND	ND	0.17
n-Butylbenzene (ug/L)	ND	ND	ND	ND	ND	ND	ND	-
n-Propylbenzene (ug/L)	ND	ND	ND	ND	ND	ND	ND	-
o-Xylene (ug/L)	ND	ND	ND	ND	ND	ND	ND	-
sec-Butylbenzene (ug/L)	ND	ND	ND	ND	ND	ND	ND	-
Styrene (ug/L)	ND	ND	ND	ND	ND	ND	ND	1200
tert-Butylbenzene (ug/L)	ND	ND	ND	ND	ND	ND	ND	-
Tetrachloroethene (ug/L)	0.82	0.81	0.78	0.92	0.84	ND	ND	12
Toluene (ug/L)	ND	ND	ND	ND	ND	ND	ND	1100
trans-1,2-Dichloroethene (ug/L)	ND	ND	ND	ND	ND	ND	ND	360
trans-1,3-Dichloropropene (ug/L)	ND	ND	ND	ND	ND	ND	ND	-
Trichloroethene (ug/L)	ND	ND	ND	ND	ND	ND	ND	0.49
Trichlorofluoromethane (ug/L)	ND	ND	ND	ND	ND	ND	ND	1100
Vinyl acetate (ug/L)	ND	ND	ND	ND	ND	ND	ND	-
Vinyl chloride (ug/L)	ND	ND	ND	ND	ND	ND	ND	-

Results below MRL reporting as ND; '-' indicates unavailable value. Values that exceed DEQ RBC receptor scenario are highlighted in red. '2' indicates continuing calibration verification was low, sample results may be low estimates.

Conclusion

Groundwater sampling on August 3rd, 2018 at Fire Station 2 revealed elevated concentrations of arsenic, chloroform and certain PFAS analytes. Field blanks concentrations for chloroform and PFAS analytes were below minimum reporting limits.

All monitoring wells exceed the DEQ RBC for Groundwater Ingestion & Inhalation for the Residential Receptor Scenario for both arsenic and chloroform.

Concentrations of PFAS that exceed the US EPA Lifetime Health Advisory of 70 ng/L include PFOS, PFOA, PFHxS, PFBS, PFHxA, PFPeA, and the fluorotelomer 6:2. These exceedances occurred solely in Monitoring Well 3 (MW-3) with the exception of PFOS in Monitoring Well 1 (MW-1).

Based on groundwater elevations taken at the time of the sampling event the general direction of regional groundwater flow at site is approximated in a NNW direction.

The results reported in this memorandum are part of a three-round sampling investigation with future sessions tentatively scheduled for November 2018 and March 2019 in accordance with the RPSP.

Figures

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ENVIRONMENTAL SERVICES
CITY OF PORTLAND
working for clean rivers

Created by: Bryan Allen
October 1, 2018

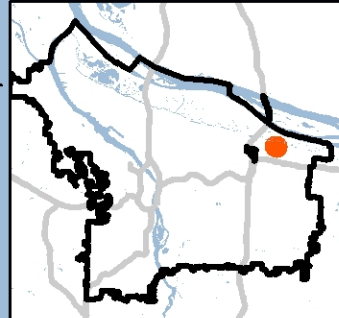
Monitoring Well Location and Groundwater Flow Direction
Portland Fire Bureau Fire Station 2

Legend

	MW-1		MW-3		Site Boundary
	MW-2		MW-4		General Groundwater Flow Direction



0 25 50 100 Feet



Appendix

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City of Portland
Water Pollution Control Laboratory
6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656
ORELAP Certification ID 4023



LABORATORY ANALYSIS REPORT

Project: **Fire Station 2** Client: Coordinated Site Analysis
Work Order: **W18H036** Project Mgr: John O'Donovan
Received: 8/3/18 18:58
Submitted By: Coordinated Site Analysis

Sample	Laboratory ID	Matrix	Type	Sample Collection Date		Qualifier
				Start	End	
MW1-001	W18H036-01	Water	Grab	08/03/18 15:15	08/03/18 15:15	LF1 LF1
MW2-001	W18H036-02	Water	Grab	08/03/18 13:34	08/03/18 13:34	LF1 LF1
MW3-001	W18H036-03	Water	Grab	08/03/18 15:45	08/03/18 15:45	LF1 LF1
MW4-001	W18H036-04	Water	Grab	08/03/18 10:48	08/03/18 10:48	LF1 LF1
MW5-001	W18H036-05	Water	Grab	08/03/18 15:45	08/03/18 15:45	LF1 LF1
Trip Blank	W18H036-06	Water	Composite	08/03/18 00:00	08/03/18 00:00	
MW1 Rinsate Blank	W18H036-07	Water	Composite	08/03/18 17:35	08/03/18 17:35	
Field Blank	W18H036-08	Water	Grab	08/03/18 00:00	08/03/18 00:00	

Analyte	Result	Units	MRL	Dil.	Batch	Prepared	Analyzed	Method	Qualifier
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General Chemistry

Total Organic Carbon

MW1-001 : W18H036-01									
Total organic carbon	ND	mg/L	1.00	B18H312	08/23/18	08/23/18	SM 5310B		
MW2-001 : W18H036-02									
Total organic carbon	ND	mg/L	1.00	B18H312	08/23/18	08/23/18	SM 5310B		
MW3-001 : W18H036-03									
Total organic carbon	ND	mg/L	1.00	B18H312	08/23/18	08/23/18	SM 5310B		
MW4-001 : W18H036-04									
Total organic carbon	ND	mg/L	1.00	B18H312	08/23/18	08/23/18	SM 5310B		
MW5-001 : W18H036-05									
Total organic carbon	ND	mg/L	1.00	B18H312	08/24/18	08/24/18	SM 5310B		

Reported: 08/31/18 13:42

The results in this report apply only to the samples analyzed. Qualifiers and case narrative comments are essential to interpretation of the analytical results. Report reproductions and/or data summaries without qualifiers and comments are incomplete.

Jennifer Shackelford

Jennifer Shackelford, Laboratory Coordinator QA/QC



City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656
ORELAP Certification ID 4023



Project: **Fire Station 2**
Work Order: **W18H036**

Client: **Coordinated Site Analysis**
Received: **08/03/18 18:58**

Analyte	Result	Units	MRL	Dil.	Batch	Prepared	Analyzed	Method	Qualifier
Total Metals									
Total Metals by ICPMS									
MW1-001 : W18H036-01									
Arsenic	0.711	ug/L	0.200	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Barium	11.0	ug/L	0.200	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Cadmium	ND	ug/L	0.100	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Chromium	0.315	ug/L	0.200	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Copper	0.312	ug/L	0.200	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Lead	ND	ug/L	0.100	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Mercury	ND	ug/L	0.00100	1	B18H106	08/08/18	08/08/18	WPCLSOP M-10	
Nickel	1.01	ug/L	0.200	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Selenium	ND	ug/L	1.00	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Silver	ND	ug/L	0.200	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Zinc	0.602	ug/L	0.500	1	B18H106	08/08/18	08/08/18	EPA 200.8	
MW2-001 : W18H036-02									
Arsenic	0.897	ug/L	0.200	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Barium	7.58	ug/L	0.200	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Cadmium	ND	ug/L	0.100	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Chromium	0.363	ug/L	0.200	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Copper	0.229	ug/L	0.200	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Lead	ND	ug/L	0.100	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Mercury	ND	ug/L	0.00100	1	B18H106	08/08/18	08/08/18	WPCLSOP M-10	
Nickel	ND	ug/L	0.200	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Selenium	ND	ug/L	1.00	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Silver	ND	ug/L	0.200	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Zinc	ND	ug/L	0.500	1	B18H106	08/08/18	08/08/18	EPA 200.8	
MW3-001 : W18H036-03									
Arsenic	0.884	ug/L	0.200	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Barium	10.1	ug/L	0.200	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Cadmium	ND	ug/L	0.100	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Chromium	0.466	ug/L	0.200	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Copper	0.288	ug/L	0.200	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Lead	ND	ug/L	0.100	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Mercury	ND	ug/L	0.00100	1	B18H106	08/08/18	08/08/18	WPCLSOP M-10	
Nickel	0.494	ug/L	0.200	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Selenium	ND	ug/L	1.00	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Silver	ND	ug/L	0.200	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Zinc	ND	ug/L	0.500	1	B18H106	08/08/18	08/08/18	EPA 200.8	
MW4-001 : W18H036-04									
Arsenic	0.775	ug/L	0.200	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Barium	10.1	ug/L	0.200	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Cadmium	ND	ug/L	0.100	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Chromium	0.366	ug/L	0.200	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Copper	0.380	ug/L	0.200	1	B18H106	08/08/18	08/08/18	EPA 200.8	

Reported: 08/31/18 13:42

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Jennifer Shackelford

Jennifer Shackelford, Laboratory Coordinator QA/QC



City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656
ORELAP Certification ID 4023



Project: **Fire Station 2**
Work Order: **W18H036**

Client: **Coordinated Site Analysis**
Received: **08/03/18 18:58**

Analyte	Result Units	MRL	Dil.	Batch	Prepared	Analyzed	Method	Qualifier
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Total Metals

Total Metals by ICPMS

MW4-001 : W18H036-04

Lead	ND ug/L	0.100	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Mercury	ND ug/L	0.00100	1	B18H106	08/08/18	08/08/18	WPCLSOP M-10	
Nickel	0.613 ug/L	0.200	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Selenium	ND ug/L	1.00	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Silver	ND ug/L	0.200	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Zinc	0.717 ug/L	0.500	1	B18H106	08/08/18	08/08/18	EPA 200.8	

MW5-001 : W18H036-05

Arsenic	0.918 ug/L	0.200	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Barium	10.6 ug/L	0.200	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Cadmium	ND ug/L	0.100	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Chromium	0.528 ug/L	0.200	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Copper	0.354 ug/L	0.200	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Lead	ND ug/L	0.100	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Mercury	ND ug/L	0.00100	1	B18H106	08/08/18	08/08/18	WPCLSOP M-10	
Nickel	0.499 ug/L	0.200	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Selenium	ND ug/L	1.00	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Silver	ND ug/L	0.200	1	B18H106	08/08/18	08/08/18	EPA 200.8	
Zinc	0.545 ug/L	0.500	1	B18H106	08/08/18	08/08/18	EPA 200.8	

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Water Pollution Control Laboratory

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Project: **Fire Station 2**
Work Order: **W18H036**

Client: **Coordinated Site Analysis**
Received: **08/03/18 18:58**

Analyte	Result Units	MRL	Dil.	Batch	Prepared	Analyzed	Method	Qualifier
Dissolved Metals								
Dissolved Metals by ICPMS								
MW1-001 : W18H036-01								
Arsenic, dissolved	0.701 ug/L	0.106	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Barium, dissolved	10.7 ug/L	0.106	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Cadmium, dissolved	ND ug/L	0.106	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Chromium, dissolved	0.294 ug/L	0.212	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Copper, dissolved	0.243 ug/L	0.212	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Lead, dissolved	ND ug/L	0.106	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Mercury, dissolved	ND ug/L	0.000530	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Nickel, dissolved	0.969 ug/L	0.530	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Selenium, dissolved	ND ug/L	0.530	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Silver, dissolved	ND ug/L	0.106	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Zinc, dissolved	0.955 ug/L	0.530	1	B18H107	08/08/18	08/08/18	EPA 200.8	
MW2-001 : W18H036-02								
Arsenic, dissolved	0.931 ug/L	0.106	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Barium, dissolved	7.51 ug/L	0.106	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Cadmium, dissolved	ND ug/L	0.106	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Chromium, dissolved	0.356 ug/L	0.212	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Copper, dissolved	ND ug/L	0.212	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Lead, dissolved	ND ug/L	0.106	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Mercury, dissolved	ND ug/L	0.000530	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Nickel, dissolved	ND ug/L	0.530	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Selenium, dissolved	ND ug/L	0.530	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Silver, dissolved	ND ug/L	0.106	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Zinc, dissolved	ND ug/L	0.530	1	B18H107	08/08/18	08/08/18	EPA 200.8	
MW3-001 : W18H036-03								
Arsenic, dissolved	0.853 ug/L	0.106	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Barium, dissolved	10.0 ug/L	0.106	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Cadmium, dissolved	ND ug/L	0.106	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Chromium, dissolved	0.359 ug/L	0.212	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Copper, dissolved	0.223 ug/L	0.212	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Lead, dissolved	ND ug/L	0.106	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Mercury, dissolved	ND ug/L	0.000530	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Nickel, dissolved	ND ug/L	0.530	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Selenium, dissolved	ND ug/L	0.530	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Silver, dissolved	ND ug/L	0.106	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Zinc, dissolved	ND ug/L	0.530	1	B18H107	08/08/18	08/08/18	EPA 200.8	
MW4-001 : W18H036-04								
Arsenic, dissolved	0.797 ug/L	0.106	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Barium, dissolved	9.42 ug/L	0.106	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Cadmium, dissolved	ND ug/L	0.106	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Chromium, dissolved	0.254 ug/L	0.212	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Copper, dissolved	0.232 ug/L	0.212	1	B18H107	08/08/18	08/08/18	EPA 200.8	

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Project: **Fire Station 2**
Work Order: **W18H036**

Client: Coordinated Site Analysis
Received: 08/03/18 18:58

Analyte	Result Units	MRL	Dil.	Batch	Prepared	Analyzed	Method	Qualifier
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Dissolved Metals

Dissolved Metals by ICPMS

MW4-001 : W18H036-04

Lead, dissolved	ND ug/L	0.106	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Mercury, dissolved	ND ug/L	0.000530	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Nickel, dissolved	0.581 ug/L	0.530	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Selenium, dissolved	ND ug/L	0.530	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Silver, dissolved	ND ug/L	0.106	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Zinc, dissolved	0.776 ug/L	0.530	1	B18H107	08/08/18	08/08/18	EPA 200.8	

MW5-001 : W18H036-05

Arsenic, dissolved	0.851 ug/L	0.106	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Barium, dissolved	9.70 ug/L	0.106	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Cadmium, dissolved	ND ug/L	0.106	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Chromium, dissolved	0.362 ug/L	0.212	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Copper, dissolved	0.223 ug/L	0.212	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Lead, dissolved	ND ug/L	0.106	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Mercury, dissolved	ND ug/L	0.000530	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Nickel, dissolved	ND ug/L	0.530	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Selenium, dissolved	ND ug/L	0.530	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Silver, dissolved	ND ug/L	0.106	1	B18H107	08/08/18	08/08/18	EPA 200.8	
Zinc, dissolved	0.639 ug/L	0.530	1	B18H107	08/08/18	08/08/18	EPA 200.8	

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Project: **Fire Station 2**
Work Order: **W18H036**

Client: **Coordinated Site Analysis**
Received: **08/03/18 18:58**

Analyte	Result	Units	MRL	Dil.	Batch	Prepared	Analyzed	Method	Qualifier
Fuels									
Diesel/Oil Hydrocarbons by GC-FID									
MW1-001 : W18H036-01									F7
Diesel	ND	mg/L	0.078	1	B18H069	08/06/18	08/06/18	NWTPH-Dx	
Lube oil	ND	mg/L	0.13	1	B18H069	08/06/18	08/06/18	NWTPH-Dx	
Surrogate	Result		Expected	%Rec	Limits(%)				
2-Fluorobiphenyl	0.0728	mg/L	0.104	70%	50-150	B18H069	08/06/18	NWTPH-Dx	
MW2-001 : W18H036-02									F7
Diesel	ND	mg/L	0.16	1	B18H069	08/06/18	08/06/18	NWTPH-Dx	
Lube oil	ND	mg/L	0.13	1	B18H069	08/06/18	08/06/18	NWTPH-Dx	
Surrogate	Result		Expected	%Rec	Limits(%)				
2-Fluorobiphenyl	0.0738	mg/L	0.104	71%	50-150	B18H069	08/06/18	NWTPH-Dx	
MW3-001 : W18H036-03									F7
Diesel	ND	mg/L	0.078	1	B18H069	08/06/18	08/06/18	NWTPH-Dx	
Lube oil	ND	mg/L	0.13	1	B18H069	08/06/18	08/06/18	NWTPH-Dx	
Surrogate	Result		Expected	%Rec	Limits(%)				
2-Fluorobiphenyl	0.0664	mg/L	0.104	64%	50-150	B18H069	08/06/18	NWTPH-Dx	
MW4-001 : W18H036-04									F7
Diesel	ND	mg/L	0.077	1	B18H069	08/06/18	08/06/18	NWTPH-Dx	
Lube oil	ND	mg/L	0.13	1	B18H069	08/06/18	08/06/18	NWTPH-Dx	
Surrogate	Result		Expected	%Rec	Limits(%)				
2-Fluorobiphenyl	0.0614	mg/L	0.103	60%	50-150	B18H069	08/06/18	NWTPH-Dx	
MW5-001 : W18H036-05									F7
Diesel	ND	mg/L	0.077	1	B18H069	08/06/18	08/06/18	NWTPH-Dx	
Lube oil	ND	mg/L	0.13	1	B18H069	08/06/18	08/06/18	NWTPH-Dx	
Surrogate	Result		Expected	%Rec	Limits(%)				
2-Fluorobiphenyl	0.0804	mg/L	0.103	78%	50-150	B18H069	08/06/18	NWTPH-Dx	

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Project: **Fire Station 2**
Work Order: **W18H036**

Client: **Coordinated Site Analysis**
Received: **08/03/18 18:58**

Analyte	Result	Units	MRL	Dil.	Batch	Prepared	Analyzed	Method	Qualifier
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Volatile Organics

Volatile Organic Compounds by GCMS

MW1-001 : W18H036-01

Acetone	ND	ug/L	20.0	1	B18H104	08/08/18	08/08/18	EPA 8260	
Benzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Bromobenzene	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Bromochloromethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Bromodichloromethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Bromoform	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Bromomethane	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
2-Butanone	ND	ug/L	10.0	1	B18H104	08/08/18	08/08/18	EPA 8260	
n-Butylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
sec-Butylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
tert-Butylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Carbon disulfide	ND	ug/L	2.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Carbon tetrachloride	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Chlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Chloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Chloroform	1.29	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Chloromethane	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
2-Chlorotoluene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
4-Chlorotoluene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2-Dibromo-3-chloropropane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Dibromochloromethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2-Dibromoethane	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Dibromomethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2-Dichlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,3-Dichlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,4-Dichlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Dichlorodifluoromethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1-Dichloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2-Dichloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1-Dichloroethene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
cis-1,2-Dichloroethene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
trans-1,2-Dichloroethene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2-Dichloropropane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,3-Dichloropropane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
2,2-Dichloropropane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1-Dichloropropene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
cis-1,3-Dichloropropene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
trans-1,3-Dichloropropene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Ethylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Hexachlorobutadiene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
2-Hexanone	ND	ug/L	5.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Isopropylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	

V3

Reported: 08/31/18 13:42

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Jennifer Shackelford

Jennifer Shackelford, Laboratory Coordinator QA/QC



City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656
ORELAP Certification ID 4023



Project: **Fire Station 2**
Work Order: **W18H036**

Client: **Coordinated Site Analysis**
Received: **08/03/18 18:58**

Analyte	Result	Units	MRL	Dil.	Batch	Prepared	Analyzed	Method	Qualifier
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Volatile Organics

Volatile Organic Compounds by GCMS

MW1-001 : W18H036-01

4-Isopropyltoluene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Methylene chloride	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Naphthalene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
n-Propylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Styrene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Tetrachloroethene	0.820	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Toluene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2,3-Trichlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2,4-Trichlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1,1-Trichloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1,2-Trichloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Trichloroethene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Trichlorofluoromethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2,3-Trichloropropane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2,4-Trimethylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,3,5-Trimethylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Vinyl acetate	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Vinyl chloride	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
m,p-Xylene	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
o-Xylene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	

Surrogate

Result	Expected	%Rec	Limits(%)					
Dibromofluoromethane	42.8	ug/L	50.0	86%	80-120	B18H104	08/08/18	08/08/18 EPA 8260
Toluene-d8	44.6	ug/L	50.0	89%	80-120	B18H104	08/08/18	08/08/18 EPA 8260
4-Bromofluorobenzene	44.9	ug/L	50.0	90%	80-120	B18H104	08/08/18	08/08/18 EPA 8260

MW2-001 : W18H036-02

Acetone	ND	ug/L	20.0	1	B18H104	08/08/18	08/08/18	EPA 8260	
Benzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Bromobenzene	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Bromochloromethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Bromodichloromethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Bromoform	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Bromomethane	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
2-Butanone	ND	ug/L	10.0	1	B18H104	08/08/18	08/08/18	EPA 8260	
n-Butylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
sec-Butylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
tert-Butylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Carbon disulfide	ND	ug/L	2.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Carbon tetrachloride	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Chlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	

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Jennifer Shackelford

Jennifer Shackelford, Laboratory Coordinator QA/QC



City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656
ORELAP Certification ID 4023



Project: **Fire Station 2**
Work Order: **W18H036**

Client: **Coordinated Site Analysis**
Received: **08/03/18 18:58**

Analyte	Result	Units	MRL	Dil.	Batch	Prepared	Analyzed	Method	Qualifier
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Volatile Organics

Volatile Organic Compounds by GCMS

MW2-001 : W18H036-02

Chloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Chloroform	1.35	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Chloromethane	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
2-Chlorotoluene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
4-Chlorotoluene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2-Dibromo-3-chloropropane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Dibromochloromethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2-Dibromoethane	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Dibromomethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2-Dichlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,3-Dichlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,4-Dichlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	V3
Dichlorodifluoromethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1-Dichloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2-Dichloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1-Dichloroethene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
cis-1,2-Dichloroethene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
trans-1,2-Dichloroethene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2-Dichloropropane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,3-Dichloropropane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
2,2-Dichloropropane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1-Dichloropropene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
cis-1,3-Dichloropropene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
trans-1,3-Dichloropropene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Ethylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Hexachlorobutadiene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
2-Hexanone	ND	ug/L	5.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Isopropylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
4-Isopropyltoluene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Methylene chloride	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Naphthalene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
n-Propylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Styrene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Tetrachloroethene	0.810	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Toluene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2,3-Trichlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2,4-Trichlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1,1-Trichloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1,2-Trichloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	

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Jennifer Shackelford, Laboratory Coordinator QA/QC



City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656
ORELAP Certification ID 4023



Project: **Fire Station 2**
Work Order: **W18H036**

Client: **Coordinated Site Analysis**
Received: **08/03/18 18:58**

Analyte	Result	Units	MRL	Dil.	Batch	Prepared	Analyzed	Method	Qualifier
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Volatile Organics

Volatile Organic Compounds by GCMS

MW2-001 : W18H036-02

Trichloroethene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Trichlorofluoromethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2,3-Trichloropropane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2,4-Trimethylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,3,5-Trimethylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Vinyl acetate	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Vinyl chloride	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
m,p-Xylene	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
o-Xylene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Surrogate	Result		Expected	%Rec	Limits(%)				
Dibromofluoromethane	43.0	ug/L	50.0	86%	80-120	B18H104	08/08/18	EPA 8260	
Toluene-d8	44.2	ug/L	50.0	88%	80-120	B18H104	08/08/18	EPA 8260	
4-Bromofluorobenzene	44.0	ug/L	50.0	88%	80-120	B18H104	08/08/18	EPA 8260	

MW3-001 : W18H036-03

Acetone	ND	ug/L	20.0	1	B18H104	08/08/18	08/08/18	EPA 8260	
Benzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Bromobenzene	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Bromochloromethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Bromodichloromethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Bromoform	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Bromomethane	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
2-Butanone	ND	ug/L	10.0	1	B18H104	08/08/18	08/08/18	EPA 8260	
n-Butylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
sec-Butylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
tert-Butylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Carbon disulfide	ND	ug/L	2.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Carbon tetrachloride	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Chlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Chloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Chloroform	1.47	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Chloromethane	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
2-Chlorotoluene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
4-Chlorotoluene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2-Dibromo-3-chloropropane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Dibromochloromethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2-Dibromoethane	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Dibromomethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2-Dichlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,3-Dichlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,4-Dichlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Dichlorodifluoromethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1-Dichloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	

V3

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Water Pollution Control Laboratory

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ORELAP Certification ID 4023



Project: **Fire Station 2**
Work Order: **W18H036**

Client: **Coordinated Site Analysis**
Received: **08/03/18 18:58**

Analyte	Result	Units	MRL	Dil.	Batch	Prepared	Analyzed	Method	Qualifier
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Volatile Organics

Volatile Organic Compounds by GCMS

MW3-001 : W18H036-03

1,2-Dichloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1-Dichloroethene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
cis-1,2-Dichloroethene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
trans-1,2-Dichloroethene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2-Dichloropropane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,3-Dichloropropane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
2,2-Dichloropropane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1-Dichloropropene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
cis-1,3-Dichloropropene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
trans-1,3-Dichloropropene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Ethylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Hexachlorobutadiene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
2-Hexanone	ND	ug/L	5.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Isopropylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
4-Isopropyltoluene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Methylene chloride	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Naphthalene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
n-Propylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Styrene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Tetrachloroethene	0.780	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Toluene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2,3-Trichlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2,4-Trichlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1,1-Trichloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1,2-Trichloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Trichloroethene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Trichlorofluoromethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2,3-Trichloropropane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2,4-Trimethylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,3,5-Trimethylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Vinyl acetate	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Vinyl chloride	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
m,p-Xylene	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
o-Xylene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Surrogate	Result		Expected	%Rec	Limits(%)				
Dibromofluoromethane	43.2	ug/L	50.0	86%	80-120	B18H104	08/08/18	08/08/18	EPA 8260
Toluene-d8	44.2	ug/L	50.0	88%	80-120	B18H104	08/08/18	08/08/18	EPA 8260
4-Bromofluorobenzene	44.9	ug/L	50.0	90%	80-120	B18H104	08/08/18	08/08/18	EPA 8260

MW4-001 : W18H036-04

Reported: 08/31/18 13:42

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Jennifer Shackelford

Jennifer Shackelford, Laboratory Coordinator QA/QC



City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656
ORELAP Certification ID 4023



Project: **Fire Station 2**
Work Order: **W18H036**

Client: **Coordinated Site Analysis**
Received: **08/03/18 18:58**

Analyte	Result	Units	MRL	Dil.	Batch	Prepared	Analyzed	Method	Qualifier
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Volatile Organics

Volatile Organic Compounds by GCMS

MW4-001 : W18H036-04

Acetone	ND	ug/L	20.0	1	B18H104	08/08/18	08/08/18	EPA 8260	
Benzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Bromobenzene	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Bromochloromethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Bromodichloromethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Bromoform	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Bromomethane	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
2-Butanone	ND	ug/L	10.0	1	B18H104	08/08/18	08/08/18	EPA 8260	
n-Butylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
sec-Butylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
tert-Butylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Carbon disulfide	ND	ug/L	2.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Carbon tetrachloride	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Chlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Chloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Chloroform	1.54	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Chloromethane	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
2-Chlorotoluene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
4-Chlorotoluene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2-Dibromo-3-chloropropane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Dibromochloromethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2-Dibromoethane	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Dibromomethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2-Dichlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,3-Dichlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,4-Dichlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Dichlorodifluoromethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1-Dichloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2-Dichloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1-Dichloroethene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
cis-1,2-Dichloroethene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
trans-1,2-Dichloroethene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2-Dichloropropane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,3-Dichloropropane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
2,2-Dichloropropane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1-Dichloropropene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
cis-1,3-Dichloropropene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
trans-1,3-Dichloropropene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Ethylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Hexachlorobutadiene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
2-Hexanone	ND	ug/L	5.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Isopropylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	

V3

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Jennifer Shackelford, Laboratory Coordinator QA/QC



City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656
ORELAP Certification ID 4023



Project: **Fire Station 2**
Work Order: **W18H036**

Client: **Coordinated Site Analysis**
Received: **08/03/18 18:58**

Analyte	Result	Units	MRL	Dil.	Batch	Prepared	Analyzed	Method	Qualifier
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Volatile Organics

Volatile Organic Compounds by GCMS

MW4-001 : W18H036-04

4-Isopropyltoluene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.00	1	B18H104	08/08/18	08/08/18	EPA 8260
Methylene chloride	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260
Naphthalene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
n-Propylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
Styrene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
1,1,1,2-Tetrachloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
1,1,2,2-Tetrachloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
Tetrachloroethene	0.920	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
Toluene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
1,2,3-Trichlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
1,2,4-Trichlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
1,1,1-Trichloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
1,1,2-Trichloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
Trichloroethene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
Trichlorofluoromethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
1,2,3-Trichloropropane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
1,2,4-Trimethylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
1,3,5-Trimethylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
Vinyl acetate	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260
Vinyl chloride	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
m,p-Xylene	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260
o-Xylene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260

Surrogate

Result	Expected	%Rec	Limits(%)					
Dibromofluoromethane	43.2	ug/L	50.0	86%	80-120	B18H104	08/08/18	08/08/18 EPA 8260
Toluene-d8	43.7	ug/L	50.0	87%	80-120	B18H104	08/08/18	08/08/18 EPA 8260
4-Bromofluorobenzene	44.4	ug/L	50.0	89%	80-120	B18H104	08/08/18	08/08/18 EPA 8260

MW5-001 : W18H036-05

Acetone	ND	ug/L	20.0	1	B18H104	08/08/18	08/08/18	EPA 8260
Benzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
Bromobenzene	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260
Bromochloromethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
Bromodichloromethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
Bromoform	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
Bromomethane	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260
2-Butanone	ND	ug/L	10.0	1	B18H104	08/08/18	08/08/18	EPA 8260
n-Butylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
sec-Butylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
tert-Butylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
Carbon disulfide	ND	ug/L	2.00	1	B18H104	08/08/18	08/08/18	EPA 8260
Carbon tetrachloride	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
Chlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260

Reported: 08/31/18 13:42

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Jennifer Shackelford

Jennifer Shackelford, Laboratory Coordinator QA/QC



City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656
ORELAP Certification ID 4023



Project: **Fire Station 2**
Work Order: **W18H036**

Client: **Coordinated Site Analysis**
Received: **08/03/18 18:58**

Analyte	Result	Units	MRL	Dil.	Batch	Prepared	Analyzed	Method	Qualifier
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Volatile Organics

Volatile Organic Compounds by GCMS

MW5-001 : W18H036-05

Chloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Chloroform	1.37	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Chloromethane	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
2-Chlorotoluene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
4-Chlorotoluene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2-Dibromo-3-chloropropane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Dibromochloromethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2-Dibromoethane	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Dibromomethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2-Dichlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,3-Dichlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,4-Dichlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	V3
Dichlorodifluoromethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1-Dichloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2-Dichloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1-Dichloroethene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
cis-1,2-Dichloroethene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
trans-1,2-Dichloroethene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2-Dichloropropane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,3-Dichloropropane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
2,2-Dichloropropane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1-Dichloropropene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
cis-1,3-Dichloropropene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
trans-1,3-Dichloropropene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Ethylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Hexachlorobutadiene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
2-Hexanone	ND	ug/L	5.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Isopropylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
4-Isopropyltoluene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Methylene chloride	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Naphthalene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
n-Propylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Styrene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Tetrachloroethene	0.840	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Toluene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2,3-Trichlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2,4-Trichlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1,1-Trichloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1,2-Trichloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	

Reported: 08/31/18 13:42

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Water Pollution Control Laboratory

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ORELAP Certification ID 4023



Project: **Fire Station 2**
Work Order: **W18H036**

Client: **Coordinated Site Analysis**
Received: **08/03/18 18:58**

Analyte	Result	Units	MRL	Dil.	Batch	Prepared	Analyzed	Method	Qualifier
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Volatile Organics

Volatile Organic Compounds by GCMS

MW5-001 : W18H036-05

Trichloroethene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Trichlorofluoromethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2,3-Trichloropropane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2,4-Trimethylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,3,5-Trimethylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Vinyl acetate	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Vinyl chloride	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
m,p-Xylene	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
o-Xylene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Surrogate	Result		Expected	%Rec	Limits(%)				
Dibromofluoromethane	42.9	ug/L	50.0	86%	80-120	B18H104	08/08/18	EPA 8260	
Toluene-d8	44.5	ug/L	50.0	89%	80-120	B18H104	08/08/18	EPA 8260	
4-Bromofluorobenzene	44.7	ug/L	50.0	89%	80-120	B18H104	08/08/18	EPA 8260	

Trip Blank : W18H036-06

Acetone	ND	ug/L	20.0	1	B18H104	08/08/18	08/08/18	EPA 8260	
Benzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Bromobenzene	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Bromochloromethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Bromodichloromethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Bromoform	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Bromomethane	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
2-Butanone	ND	ug/L	10.0	1	B18H104	08/08/18	08/08/18	EPA 8260	
n-Butylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
sec-Butylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
tert-Butylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Carbon disulfide	ND	ug/L	2.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Carbon tetrachloride	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Chlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Chloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Chloroform	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Chloromethane	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
2-Chlorotoluene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
4-Chlorotoluene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2-Dibromo-3-chloropropane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Dibromochloromethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2-Dibromoethane	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Dibromomethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2-Dichlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,3-Dichlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,4-Dichlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Dichlorodifluoromethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1-Dichloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	

V3

Reported: 08/31/18 13:42

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Jennifer Shackelford

Jennifer Shackelford, Laboratory Coordinator QA/QC



City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656
ORELAP Certification ID 4023



Project: **Fire Station 2**
Work Order: **W18H036**

Client: **Coordinated Site Analysis**
Received: **08/03/18 18:58**

Analyte	Result	Units	MRL	Dil.	Batch	Prepared	Analyzed	Method	Qualifier
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Volatile Organics

Volatile Organic Compounds by GCMS

Trip Blank : W18H036-06

1,2-Dichloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1-Dichloroethene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
cis-1,2-Dichloroethene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
trans-1,2-Dichloroethene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2-Dichloropropane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,3-Dichloropropane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
2,2-Dichloropropane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1-Dichloropropene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
cis-1,3-Dichloropropene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
trans-1,3-Dichloropropene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Ethylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Hexachlorobutadiene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
2-Hexanone	ND	ug/L	5.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Isopropylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
4-Isopropyltoluene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Methylene chloride	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Naphthalene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
n-Propylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Styrene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Tetrachloroethene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Toluene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2,3-Trichlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2,4-Trichlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1,1-Trichloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1,2-Trichloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Trichloroethene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Trichlorofluoromethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2,3-Trichloropropane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2,4-Trimethylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,3,5-Trimethylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Vinyl acetate	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Vinyl chloride	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
m,p-Xylene	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
o-Xylene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Surrogate	Result		Expected	%Rec	Limits(%)				
Dibromofluoromethane	43.0	ug/L	50.0	86%	80-120	B18H104	08/08/18	08/08/18	EPA 8260
Toluene-d8	44.6	ug/L	50.0	89%	80-120	B18H104	08/08/18	08/08/18	EPA 8260
4-Bromofluorobenzene	44.4	ug/L	50.0	89%	80-120	B18H104	08/08/18	08/08/18	EPA 8260

MW1 Rinsate Blank : W18H036-07

Reported: 08/31/18 13:42

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Jennifer Shackelford

Jennifer Shackelford, Laboratory Coordinator QA/QC



City of Portland
Water Pollution Control Laboratory

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ORELAP Certification ID 4023



Project: **Fire Station 2**
Work Order: **W18H036**

Client: **Coordinated Site Analysis**
Received: **08/03/18 18:58**

Analyte	Result	Units	MRL	Dil.	Batch	Prepared	Analyzed	Method	Qualifier
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Volatile Organics

Volatile Organic Compounds by GCMS

MW1 Rinsate Blank : W18H036-07

Acetone	ND	ug/L	20.0	1	B18H104	08/08/18	08/08/18	EPA 8260	
Benzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Bromobenzene	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Bromochloromethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Bromodichloromethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Bromoform	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Bromomethane	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
2-Butanone	ND	ug/L	10.0	1	B18H104	08/08/18	08/08/18	EPA 8260	
n-Butylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
sec-Butylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
tert-Butylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Carbon disulfide	ND	ug/L	2.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Carbon tetrachloride	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Chlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Chloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Chloroform	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Chloromethane	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
2-Chlorotoluene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
4-Chlorotoluene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2-Dibromo-3-chloropropane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Dibromochloromethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2-Dibromoethane	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Dibromomethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2-Dichlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,3-Dichlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,4-Dichlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Dichlorodifluoromethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1-Dichloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2-Dichloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1-Dichloroethene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
cis-1,2-Dichloroethene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
trans-1,2-Dichloroethene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,2-Dichloropropane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,3-Dichloropropane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
2,2-Dichloropropane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
1,1-Dichloropropene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
cis-1,3-Dichloropropene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
trans-1,3-Dichloropropene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Ethylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
Hexachlorobutadiene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	
2-Hexanone	ND	ug/L	5.00	1	B18H104	08/08/18	08/08/18	EPA 8260	
Isopropylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260	

V3

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City of Portland
Water Pollution Control Laboratory

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ORELAP Certification ID 4023



Project: **Fire Station 2**
Work Order: **W18H036**

Client: **Coordinated Site Analysis**
Received: **08/03/18 18:58**

Analyte	Result	Units	MRL	Dil.	Batch	Prepared	Analyzed	Method	Qualifier
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Volatile Organics

Volatile Organic Compounds by GCMS

MW1 Rinsate Blank : W18H036-07

4-Isopropyltoluene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.00	1	B18H104	08/08/18	08/08/18	EPA 8260
Methylene chloride	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260
Naphthalene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
n-Propylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
Styrene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
1,1,1,2-Tetrachloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
1,1,2,2-Tetrachloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
Tetrachloroethene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
Toluene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
1,2,3-Trichlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
1,2,4-Trichlorobenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
1,1,1-Trichloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
1,1,2-Trichloroethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
Trichloroethene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
Trichlorofluoromethane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
1,2,3-Trichloropropane	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
1,2,4-Trimethylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
1,3,5-Trimethylbenzene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
Vinyl acetate	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260
Vinyl chloride	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260
m,p-Xylene	ND	ug/L	1.00	1	B18H104	08/08/18	08/08/18	EPA 8260
o-Xylene	ND	ug/L	0.500	1	B18H104	08/08/18	08/08/18	EPA 8260

Surrogate

Result	Expected	%Rec	Limits(%)					
Dibromofluoromethane	43.8	ug/L	50.0	88%	80-120	B18H104	08/08/18	EPA 8260
Toluene-d8	44.2	ug/L	50.0	88%	80-120	B18H104	08/08/18	EPA 8260
4-Bromofluorobenzene	44.5	ug/L	50.0	89%	80-120	B18H104	08/08/18	EPA 8260

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Project: **Fire Station 2**
Work Order: **W18H036**

Client: **Coordinated Site Analysis**
Received: **08/03/18 18:58**

Analyte	Result	Units	MRL	Dil.	Batch	Prepared	Analyzed	Method	Qualifier
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Semivolatile Organics - SIM

Polynuclear Aromatic Hydrocarbons by GCMS-SIM

MW1-001 : W18H036-01

Acenaphthene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Acenaphthylene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Anthracene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Benzo(a)anthracene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Benzo(a)pyrene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Benzo(b)fluoranthene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Benzo(g,h,i)perylene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Benzo(k)fluoranthene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Chrysene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Dibenzo(a,h)anthracene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Fluoranthene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Fluorene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Naphthalene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Phenanthrene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Pyrene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Surrogate	Result		Expected	%Rec	Limits(%)				
2-Methylnaphthalene-d10	0.26	ug/L	0.229	113%	31-164	B18H108	08/08/18	08/08/18	EPA 8270-SIM
Fluoranthene-d10	0.27	ug/L	0.229	118%	65-145	B18H108	08/08/18	08/08/18	EPA 8270-SIM

MW2-001 : W18H036-02

Acenaphthene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Acenaphthylene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Anthracene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Benzo(a)anthracene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Benzo(a)pyrene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Benzo(b)fluoranthene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Benzo(g,h,i)perylene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Benzo(k)fluoranthene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Chrysene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Dibenzo(a,h)anthracene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Fluoranthene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Fluorene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Naphthalene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Phenanthrene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Pyrene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Surrogate	Result		Expected	%Rec	Limits(%)				
2-Methylnaphthalene-d10	0.23	ug/L	0.229	102%	31-164	B18H108	08/08/18	08/08/18	EPA 8270-SIM
Fluoranthene-d10	0.26	ug/L	0.229	114%	65-145	B18H108	08/08/18	08/08/18	EPA 8270-SIM

MW3-001 : W18H036-03

Acenaphthene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Acenaphthylene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	

Reported: 08/31/18 13:42

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City of Portland
Water Pollution Control Laboratory

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ORELAP Certification ID 4023



Project: **Fire Station 2**
Work Order: **W18H036**

Client: **Coordinated Site Analysis**
Received: **08/03/18 18:58**

Analyte	Result	Units	MRL	Dil.	Batch	Prepared	Analyzed	Method	Qualifier
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Semivolatile Organics - SIM

Polynuclear Aromatic Hydrocarbons by GCMS-SIM

MW3-001 : W18H036-03

Anthracene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Benzo(a)anthracene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Benzo(a)pyrene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Benzo(b)fluoranthene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Benzo(g,h,i)perylene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Benzo(k)fluoranthene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Chrysene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Dibenzo(a,h)anthracene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Fluoranthene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Fluorene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Naphthalene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Phenanthrene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Pyrene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Surrogate	Result		Expected	%Rec	Limits(%)				
2-Methylnaphthalene-d10	0.23	ug/L	0.229	103%	31-164	B18H108	08/08/18	08/08/18	EPA 8270-SIM
Fluoranthene-d10	0.25	ug/L	0.229	110%	65-145	B18H108	08/08/18	08/08/18	EPA 8270-SIM

MW4-001 : W18H036-04

Acenaphthene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Acenaphthylene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Anthracene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Benzo(a)anthracene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Benzo(a)pyrene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Benzo(b)fluoranthene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Benzo(g,h,i)perylene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Benzo(k)fluoranthene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Chrysene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Dibenzo(a,h)anthracene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Fluoranthene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Fluorene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Naphthalene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Phenanthrene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Pyrene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Surrogate	Result		Expected	%Rec	Limits(%)				
2-Methylnaphthalene-d10	0.23	ug/L	0.229	102%	31-164	B18H108	08/08/18	08/08/18	EPA 8270-SIM
Fluoranthene-d10	0.26	ug/L	0.229	113%	65-145	B18H108	08/08/18	08/08/18	EPA 8270-SIM

MW5-001 : W18H036-05

Acenaphthene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Acenaphthylene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Anthracene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Benzo(a)anthracene	ND	ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	

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Water Pollution Control Laboratory

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ORELAP Certification ID 4023



Project: **Fire Station 2**
Work Order: **W18H036**

Client: **Coordinated Site Analysis**
Received: **08/03/18 18:58**

Analyte	Result Units	MRL	Dil.	Batch	Prepared	Analyzed	Method	Qualifier
Semivolatile Organics - SIM								
Polynuclear Aromatic Hydrocarbons by GCMS-SIM								
MW5-001 : W18H036-05								
Benzo(a)pyrene	ND ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Benzo(b)fluoranthene	ND ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Benzo(g,h,i)perylene	ND ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Benzo(k)fluoranthene	ND ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Chrysene	ND ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Dibenzo(a,h)anthracene	ND ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Fluoranthene	ND ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Fluorene	ND ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Indeno(1,2,3-cd)pyrene	ND ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Naphthalene	ND ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Phenanthrene	ND ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Pyrene	ND ug/L	0.050	1	B18H108	08/08/18	08/08/18	EPA 8270-SIM	
Surrogate	Result	Expected	%Rec	Limits(%)				
2-Methylnaphthalene-d10	0.23 ug/L	0.229	102%	31-164	B18H108	08/08/18	EPA 8270-SIM	
Fluoranthene-d10	0.25 ug/L	0.229	108%	65-145	B18H108	08/08/18	EPA 8270-SIM	

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Project: **Fire Station 2**
Work Order: **W18H036**

Client: **Coordinated Site Analysis**
Received: **08/03/18 18:58**

Quality Control Report

General Chemistry - QC

Analyte	Result	Units	MRL	Spike Level	Source Result	%Rec (Limits)	RPD (Limit)	Prepared: Analyzed	Qualifier
Total Organic Carbon - Batch B18H312									
Blank (B18H312-BLK1)									
Total organic carbon	ND	mg/L	1.00					08/23/18 :08/23/18	
LCS (B18H312-BS1)									
Total organic carbon	5.05	mg/L	1.00	5.00		101% (90-110)		08/23/18 :08/23/18	
Duplicate (B18H312-DUP1) Source: W18H036-03									
Total organic carbon	ND	mg/L	1.00		ND		(15)	08/23/18 :08/23/18	
Duplicate (B18H312-DUP2) Source: W18H066-01									
Total organic carbon	2.10	mg/L	1.00		2.19		4 (15)	08/24/18 :08/24/18	
Matrix Spike (B18H312-MS1) Source: W18H036-03									
Total organic carbon	3.36	mg/L	1.00	3.00	ND	112% (85-115)		08/23/18 :08/23/18	
Matrix Spike (B18H312-MS2) Source: W18H066-01									
Total organic carbon	5.16	mg/L	1.00	3.00	2.19	99% (85-115)		08/24/18 :08/24/18	

Total Metals - QC

Analyte	Result	Units	MRL	Spike Level	Source Result	%Rec (Limits)	RPD (Limit)	Prepared: Analyzed	Qualifier
Total Metals by ICPMS - Batch B18H106									
Blank (B18H106-BLK1)									
Arsenic	ND	ug/L	0.200					08/08/18 :08/08/18	
Barium	ND	ug/L	0.200					08/08/18 :08/08/18	
Cadmium	ND	ug/L	0.100					08/08/18 :08/08/18	
Chromium	ND	ug/L	0.200					08/08/18 :08/08/18	
Copper	ND	ug/L	0.200					08/08/18 :08/08/18	
Lead	ND	ug/L	0.100					08/08/18 :08/08/18	
Mercury	ND	ug/L	0.00100					08/08/18 :08/08/18	
Nickel	ND	ug/L	0.200					08/08/18 :08/08/18	
Selenium	ND	ug/L	1.00					08/08/18 :08/08/18	
Silver	ND	ug/L	0.200					08/08/18 :08/08/18	
Zinc	ND	ug/L	0.500					08/08/18 :08/08/18	
LCS (B18H106-BS1)									
Arsenic	18.1	ug/L	0.200	20.0		91% (85-115)		08/08/18 :08/08/18	
Barium	20.1	ug/L	0.200	20.0		100% (85-115)		08/08/18 :08/08/18	
Cadmium	19.5	ug/L	0.100	20.0		98% (85-115)		08/08/18 :08/08/18	

Reported: 08/31/18 13:42

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Water Pollution Control Laboratory

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Project: **Fire Station 2**
Work Order: **W18H036**

Client: **Coordinated Site Analysis**
Received: **08/03/18 18:58**

Total Metals - QC

Analyte	Result	Units	MRL	Spike Level	Source Result	%Rec (Limits)	RPD (Limit)	Prepared: Analyzed	Qualifier
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Total Metals by ICPMS - Batch B18H106

LCS (B18H106-BS1)

Chromium	20.6 ug/L	0.200	20.0	103% (85-115)	08/08/18 :08/08/18
Copper	21.8 ug/L	0.200	20.0	109% (85-115)	08/08/18 :08/08/18
Lead	19.1 ug/L	0.100	20.0	96% (85-115)	08/08/18 :08/08/18
Mercury	0.0280 ug/L	0.00100	0.0300	93% (85-125)	08/08/18 :08/08/18
Nickel	20.5 ug/L	0.200	20.0	102% (85-115)	08/08/18 :08/08/18
Selenium	87.9 ug/L	1.00	100	88% (85-115)	08/08/18 :08/08/18
Silver	20.5 ug/L	0.200	20.0	102% (85-115)	08/08/18 :08/08/18
Zinc	91.2 ug/L	0.500	100	91% (85-115)	08/08/18 :08/08/18

Duplicate (B18H106-DUP1)

Source: W18H036-01

Arsenic	0.702 ug/L	0.200	0.711	1 (20)	08/08/18 :08/08/18	
Barium	11.0 ug/L	0.200	11.0	0.5 (20)	08/08/18 :08/08/18	
Cadmium	ND ug/L	0.100	ND	(20)	08/08/18 :08/08/18	
Chromium	0.298 ug/L	0.200	0.315	6 (20)	08/08/18 :08/08/18	
Copper	0.842 ug/L	0.200	0.312	92 (20)	08/08/18 :08/08/18	M8
Lead	ND ug/L	0.100	ND	(20)	08/08/18 :08/08/18	
Mercury	ND ug/L	0.00100	ND	(20)	08/08/18 :08/08/18	
Nickel	1.01 ug/L	0.200	1.01	0.3 (20)	08/08/18 :08/08/18	
Selenium	ND ug/L	1.00	ND	(20)	08/08/18 :08/08/18	
Silver	ND ug/L	0.200	ND	(20)	08/08/18 :08/08/18	
Zinc	0.831 ug/L	0.500	0.602	32 (20)	08/08/18 :08/08/18	M8

Duplicate (B18H106-DUP2)

Source: W18H042-02

Arsenic	0.477 ug/L	0.200	0.488	2 (20)	08/08/18 :08/08/18
Barium	29.2 ug/L	0.200	29.7	2 (20)	08/08/18 :08/08/18
Cadmium	ND ug/L	0.100	ND	(20)	08/08/18 :08/08/18
Chromium	0.268 ug/L	0.200	0.243	10 (20)	08/08/18 :08/08/18
Copper	1.15 ug/L	0.200	1.18	3 (20)	08/08/18 :08/08/18
Lead	0.285 ug/L	0.100	0.257	11 (20)	08/08/18 :08/08/18
Mercury	ND ug/L	0.00100	ND	(20)	08/08/18 :08/08/18
Nickel	0.819 ug/L	0.200	0.810	1 (20)	08/08/18 :08/08/18
Selenium	ND ug/L	1.00	ND	(20)	08/08/18 :08/08/18
Silver	ND ug/L	0.200	ND	(20)	08/08/18 :08/08/18
Zinc	89.8 ug/L	0.500	89.7	0.04 (20)	08/08/18 :08/08/18

Matrix Spike (B18H106-MS1)

Source: W18H036-01

Arsenic	19.2 ug/L	0.200	20.0	0.711	93% (70-130)	08/08/18 :08/08/18
Barium	31.0 ug/L	0.200	20.0	11.0	100% (70-130)	08/08/18 :08/08/18
Cadmium	19.5 ug/L	0.100	20.0	ND	98% (70-130)	08/08/18 :08/08/18
Chromium	20.8 ug/L	0.200	20.0	0.315	102% (70-130)	08/08/18 :08/08/18
Copper	21.7 ug/L	0.200	20.0	0.312	107% (70-130)	08/08/18 :08/08/18
Lead	18.8 ug/L	0.100	20.0	ND	94% (70-130)	08/08/18 :08/08/18

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Project: **Fire Station 2**
Work Order: **W18H036**

Client: **Coordinated Site Analysis**
Received: **08/03/18 18:58**

Total Metals - QC

Analyte	Result	Units	MRL	Spike Level	Source Result	%Rec (Limits)	RPD (Limit)	Prepared: Analyzed	Qualifier
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Total Metals by ICPMS - Batch B18H106

Matrix Spike (B18H106-MS1)

Source: W18H036-01

Mercury	0.0278	ug/L	0.00100	0.0300	ND	93% (70-130)		08/08/18 :08/08/18	
Nickel	21.1	ug/L	0.200	20.0	1.01	101% (70-130)		08/08/18 :08/08/18	
Selenium	89.2	ug/L	1.00	100	ND	89% (70-130)		08/08/18 :08/08/18	
Silver	20.5	ug/L	0.200	20.0	ND	102% (70-130)		08/08/18 :08/08/18	
Zinc	91.1	ug/L	0.500	100	0.602	90% (70-130)		08/08/18 :08/08/18	

Matrix Spike (B18H106-MS2)

Source: W18H042-02

Arsenic	19.0	ug/L	0.200	20.0	0.488	93% (70-130)		08/08/18 :08/08/18	
Barium	50.1	ug/L	0.200	20.0	29.7	102% (70-130)		08/08/18 :08/08/18	
Cadmium	19.5	ug/L	0.100	20.0	ND	98% (70-130)		08/08/18 :08/08/18	
Chromium	20.7	ug/L	0.200	20.0	0.243	102% (70-130)		08/08/18 :08/08/18	
Copper	22.2	ug/L	0.200	20.0	1.18	105% (70-130)		08/08/18 :08/08/18	
Lead	19.1	ug/L	0.100	20.0	0.257	94% (70-130)		08/08/18 :08/08/18	
Mercury	0.0273	ug/L	0.00100	0.0300	ND	91% (70-130)		08/08/18 :08/08/18	
Nickel	20.6	ug/L	0.200	20.0	0.810	99% (70-130)		08/08/18 :08/08/18	
Selenium	89.0	ug/L	1.00	100	ND	89% (70-130)		08/08/18 :08/08/18	
Silver	20.3	ug/L	0.200	20.0	ND	101% (70-130)		08/08/18 :08/08/18	
Zinc	177	ug/L	0.500	100	89.7	87% (70-130)		08/08/18 :08/08/18	

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Project: **Fire Station 2**
Work Order: **W18H036**

Client: **Coordinated Site Analysis**
Received: **08/03/18 18:58**

Dissolved Metals - QC

Analyte	Result	Units	MRL	Spike Level	Source Result	%Rec (Limits)	RPD (Limit)	Prepared: Analyzed	Qualifier
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Dissolved Metals by ICPMS - Batch B18H107

Blank (B18H107-BLK1)

Arsenic, dissolved	ND	ug/L	0.106					08/08/18 :08/08/18	
Barium, dissolved	ND	ug/L	0.106					08/08/18 :08/08/18	
Cadmium, dissolved	ND	ug/L	0.106					08/08/18 :08/08/18	
Chromium, dissolved	ND	ug/L	0.212					08/08/18 :08/08/18	
Copper, dissolved	ND	ug/L	0.212					08/08/18 :08/08/18	
Lead, dissolved	ND	ug/L	0.106					08/08/18 :08/08/18	
Mercury, dissolved	ND	ug/L	0.000530					08/08/18 :08/08/18	
Nickel, dissolved	ND	ug/L	0.530					08/08/18 :08/08/18	
Selenium, dissolved	ND	ug/L	0.530					08/08/18 :08/08/18	
Silver, dissolved	ND	ug/L	0.106					08/08/18 :08/08/18	
Zinc, dissolved	ND	ug/L	0.530					08/08/18 :08/08/18	

LCS (B18H107-BS1)

Arsenic, dissolved	2.86	ug/L	0.106	3.19		89% (85-115)		08/08/18 :08/08/18	
Barium, dissolved	47.5	ug/L	0.106	47.9		99% (85-115)		08/08/18 :08/08/18	
Cadmium, dissolved	3.17	ug/L	0.106	3.19		99% (85-115)		08/08/18 :08/08/18	
Chromium, dissolved	9.84	ug/L	0.213	9.58		103% (85-115)		08/08/18 :08/08/18	
Copper, dissolved	17.2	ug/L	0.213	16.0		108% (85-115)		08/08/18 :08/08/18	
Lead, dissolved	15.2	ug/L	0.106	16.0		95% (85-115)		08/08/18 :08/08/18	
Mercury, dissolved	0.00937	ug/L	0.000532	0.0106		88% (85-115)		08/08/18 :08/08/18	
Nickel, dissolved	16.3	ug/L	0.532	16.0		102% (85-115)		08/08/18 :08/08/18	
Selenium, dissolved	15.8	ug/L	0.532	16.0		99% (85-115)		08/08/18 :08/08/18	
Silver, dissolved	3.36	ug/L	0.106	3.19		105% (85-115)		08/08/18 :08/08/18	
Zinc, dissolved	16.6	ug/L	0.532	16.0		104% (85-115)		08/08/18 :08/08/18	

Duplicate (B18H107-DUP1)

Source: W18H036-01

Arsenic, dissolved	0.714	ug/L	0.106		0.701	2 (20)		08/08/18 :08/08/18	
Barium, dissolved	10.0	ug/L	0.106		10.7	6 (20)		08/08/18 :08/08/18	
Cadmium, dissolved	ND	ug/L	0.106		ND	(20)		08/08/18 :08/08/18	
Chromium, dissolved	0.378	ug/L	0.212		0.294	25 (20)		08/08/18 :08/08/18	M8
Copper, dissolved	0.235	ug/L	0.212		0.243	3 (20)		08/08/18 :08/08/18	
Lead, dissolved	ND	ug/L	0.106		ND	(20)		08/08/18 :08/08/18	
Mercury, dissolved	ND	ug/L	0.000530		ND	(20)		08/08/18 :08/08/18	
Nickel, dissolved	0.946	ug/L	0.530		0.969	2 (20)		08/08/18 :08/08/18	
Selenium, dissolved	ND	ug/L	0.530		ND	(20)		08/08/18 :08/08/18	
Silver, dissolved	ND	ug/L	0.106		ND	(20)		08/08/18 :08/08/18	
Zinc, dissolved	1.54	ug/L	0.530		0.955	47 (20)		08/08/18 :08/08/18	M8

Duplicate (B18H107-DUP2)

Source: W18H042-03

Arsenic, dissolved	0.437	ug/L	0.106		0.420	4 (20)		08/08/18 :08/08/18	
Barium, dissolved	36.6	ug/L	0.106		35.6	3 (20)		08/08/18 :08/08/18	
Cadmium, dissolved	ND	ug/L	0.106		ND	(20)		08/08/18 :08/08/18	

Reported: 08/31/18 13:42

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Water Pollution Control Laboratory

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ORELAP Certification ID 4023



Project: **Fire Station 2**
Work Order: **W18H036**

Client: **Coordinated Site Analysis**
Received: **08/03/18 18:58**

Dissolved Metals - QC

Analyte	Result	Units	MRL	Spike Level	Source Result	%Rec (Limits)	RPD (Limit)	Prepared: Analyzed	Qualifier
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Dissolved Metals by ICPMS - Batch B18H107

Duplicate (B18H107-DUP2)

Source: W18H042-03

Chromium, dissolved	ND	ug/L	0.212		ND	(20)	08/08/18 :08/08/18	
Copper, dissolved	0.426	ug/L	0.212		0.398	7 (20)	08/08/18 :08/08/18	
Lead, dissolved	ND	ug/L	0.106		ND	(20)	08/08/18 :08/08/18	
Mercury, dissolved	ND	ug/L	0.000530		ND	(20)	08/08/18 :08/08/18	
Nickel, dissolved	1.03	ug/L	0.530		1.01	2 (20)	08/08/18 :08/08/18	
Selenium, dissolved	ND	ug/L	0.530		ND	(20)	08/08/18 :08/08/18	
Silver, dissolved	ND	ug/L	0.106		ND	(20)	08/08/18 :08/08/18	
Zinc, dissolved	9.25	ug/L	0.530		9.42	2 (20)	08/08/18 :08/08/18	

Matrix Spike (B18H107-MS1)

Source: W18H036-01

Arsenic, dissolved	3.60	ug/L	0.106	3.19	0.701	91% (70-130)	08/08/18 :08/08/18	
Barium, dissolved	59.2	ug/L	0.106	47.9	10.7	101% (70-130)	08/08/18 :08/08/18	
Cadmium, dissolved	3.08	ug/L	0.106	3.19	ND	97% (70-130)	08/08/18 :08/08/18	
Chromium, dissolved	9.98	ug/L	0.213	9.58	0.294	101% (70-130)	08/08/18 :08/08/18	
Copper, dissolved	16.7	ug/L	0.213	16.0	0.243	103% (70-130)	08/08/18 :08/08/18	
Lead, dissolved	14.8	ug/L	0.106	16.0	ND	92% (70-130)	08/08/18 :08/08/18	
Mercury, dissolved	0.00887	ug/L	0.000532	0.0106	ND	83% (70-130)	08/08/18 :08/08/18	
Nickel, dissolved	16.8	ug/L	0.532	16.0	0.969	99% (70-130)	08/08/18 :08/08/18	
Selenium, dissolved	16.2	ug/L	0.532	16.0	ND	101% (70-130)	08/08/18 :08/08/18	
Silver, dissolved	3.20	ug/L	0.106	3.19	ND	100% (70-130)	08/08/18 :08/08/18	
Zinc, dissolved	17.0	ug/L	0.532	16.0	0.955	100% (70-130)	08/08/18 :08/08/18	

Matrix Spike (B18H107-MS2)

Source: W18H042-03

Arsenic, dissolved	3.29	ug/L	0.106	3.19	0.420	90% (70-130)	08/08/18 :08/08/18	
Barium, dissolved	81.9	ug/L	0.106	47.9	35.6	97% (70-130)	08/08/18 :08/08/18	
Cadmium, dissolved	3.04	ug/L	0.106	3.19	ND	95% (70-130)	08/08/18 :08/08/18	
Chromium, dissolved	9.75	ug/L	0.213	9.58	ND	102% (70-130)	08/08/18 :08/08/18	
Copper, dissolved	16.2	ug/L	0.213	16.0	0.398	99% (70-130)	08/08/18 :08/08/18	
Lead, dissolved	14.5	ug/L	0.106	16.0	ND	91% (70-130)	08/08/18 :08/08/18	
Mercury, dissolved	0.00958	ug/L	0.000532	0.0106	ND	90% (70-130)	08/08/18 :08/08/18	
Nickel, dissolved	16.1	ug/L	0.532	16.0	1.01	94% (70-130)	08/08/18 :08/08/18	
Selenium, dissolved	16.5	ug/L	0.532	16.0	ND	104% (70-130)	08/08/18 :08/08/18	
Silver, dissolved	3.07	ug/L	0.106	3.19	ND	96% (70-130)	08/08/18 :08/08/18	
Zinc, dissolved	24.4	ug/L	0.532	16.0	9.42	94% (70-130)	08/08/18 :08/08/18	

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Water Pollution Control Laboratory

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ORELAP Certification ID 4023



Project: **Fire Station 2**
Work Order: **W18H036**

Client: **Coordinated Site Analysis**
Received: **08/03/18 18:58**

Fuels - QC

Analyte	Result	Units	MRL	Spike Level	Source Result	%Rec (Limits)	RPD (Limit)	Prepared: Analyzed	Qualifier
Diesel/Oil Hydrocarbons by GC-FID - Batch B18H069									
Blank (B18H069-BLK1)									
Diesel	ND	mg/L	0.075					08/06/18 :08/06/18	F7
Lube oil	ND	mg/L	0.12					08/06/18 :08/06/18	
Surrogate									
2-Fluorobiphenyl	0.0633	mg/L		0.100		63% (50-150)		08/06/18 :08/06/18	
LCS (B18H069-BS1)									
Diesel	0.827	mg/L	0.075	1.00		83% (50-150)		08/06/18 :08/06/18	F7
Lube oil	0.801	mg/L	0.12	1.00		80% (50-150)		08/06/18 :08/06/18	
Surrogate									
2-Fluorobiphenyl	0.0694	mg/L		0.100		69% (50-150)		08/06/18 :08/06/18	
LCS Dup (B18H069-BSD1)									
Diesel	0.813	mg/L	0.075	1.00		81% (50-150)	2 (200)	08/06/18 :08/06/18	F7
Lube oil	0.796	mg/L	0.12	1.00		80% (50-150)	0.6 (200)	08/06/18 :08/06/18	
Surrogate									
2-Fluorobiphenyl	0.0661	mg/L		0.100		66% (50-150)		08/06/18 :08/06/18	

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Project: **Fire Station 2**
Work Order: **W18H036**

Client: **Coordinated Site Analysis**
Received: **08/03/18 18:58**

Volatile Organics - QC

Analyte	Result	Units	MRL	Spike Level	Source Result	%Rec (Limits)	RPD (Limit)	Prepared: Analyzed	Qualifier
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Volatile Organic Compounds by GCMS - Batch B18H104

Blank (B18H104-BLK1)

Acetone	ND	ug/L	20.0					08/08/18 :08/08/18	
Benzene	ND	ug/L	0.500					08/08/18 :08/08/18	
Bromobenzene	ND	ug/L	1.00					08/08/18 :08/08/18	
Bromochloromethane	ND	ug/L	0.500					08/08/18 :08/08/18	
Bromodichloromethane	ND	ug/L	0.500					08/08/18 :08/08/18	
Bromoform	ND	ug/L	0.500					08/08/18 :08/08/18	
Bromomethane	ND	ug/L	1.00					08/08/18 :08/08/18	
2-Butanone	ND	ug/L	10.0					08/08/18 :08/08/18	
n-Butylbenzene	ND	ug/L	0.500					08/08/18 :08/08/18	
sec-Butylbenzene	ND	ug/L	0.500					08/08/18 :08/08/18	
tert-Butylbenzene	ND	ug/L	0.500					08/08/18 :08/08/18	
Carbon disulfide	ND	ug/L	2.00					08/08/18 :08/08/18	
Carbon tetrachloride	ND	ug/L	0.500					08/08/18 :08/08/18	
Chlorobenzene	ND	ug/L	0.500					08/08/18 :08/08/18	
Chloroethane	ND	ug/L	0.500					08/08/18 :08/08/18	
Chloroform	ND	ug/L	0.500					08/08/18 :08/08/18	
Chloromethane	ND	ug/L	1.00					08/08/18 :08/08/18	
2-Chlorotoluene	ND	ug/L	0.500					08/08/18 :08/08/18	
4-Chlorotoluene	ND	ug/L	0.500					08/08/18 :08/08/18	
1,2-Dibromo-3-chloropropane	ND	ug/L	0.500					08/08/18 :08/08/18	
Dibromochloromethane	ND	ug/L	0.500					08/08/18 :08/08/18	
1,2-Dibromoethane	ND	ug/L	1.00					08/08/18 :08/08/18	
Dibromomethane	ND	ug/L	0.500					08/08/18 :08/08/18	
1,2-Dichlorobenzene	ND	ug/L	0.500					08/08/18 :08/08/18	
1,3-Dichlorobenzene	ND	ug/L	0.500					08/08/18 :08/08/18	
1,4-Dichlorobenzene	ND	ug/L	0.500					08/08/18 :08/08/18	V3
Dichlorodifluoromethane	ND	ug/L	0.500					08/08/18 :08/08/18	
1,1-Dichloroethane	ND	ug/L	0.500					08/08/18 :08/08/18	
1,2-Dichloroethane	ND	ug/L	0.500					08/08/18 :08/08/18	
1,1-Dichloroethene	ND	ug/L	0.500					08/08/18 :08/08/18	
cis-1,2-Dichloroethene	ND	ug/L	0.500					08/08/18 :08/08/18	
trans-1,2-Dichloroethene	ND	ug/L	0.500					08/08/18 :08/08/18	
1,2-Dichloropropane	ND	ug/L	0.500					08/08/18 :08/08/18	
1,3-Dichloropropane	ND	ug/L	0.500					08/08/18 :08/08/18	
2,2-Dichloropropane	ND	ug/L	0.500					08/08/18 :08/08/18	
1,1-Dichloropropene	ND	ug/L	0.500					08/08/18 :08/08/18	
cis-1,3-Dichloropropene	ND	ug/L	0.500					08/08/18 :08/08/18	
trans-1,3-Dichloropropene	ND	ug/L	0.500					08/08/18 :08/08/18	
Ethylbenzene	ND	ug/L	0.500					08/08/18 :08/08/18	
Hexachlorobutadiene	ND	ug/L	0.500					08/08/18 :08/08/18	
2-Hexanone	ND	ug/L	5.00					08/08/18 :08/08/18	

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Water Pollution Control Laboratory

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ORELAP Certification ID 4023



Project: **Fire Station 2**
Work Order: **W18H036**

Client: **Coordinated Site Analysis**
Received: **08/03/18 18:58**

Volatile Organics - QC

Analyte	Result	Units	MRL	Spike Level	Source Result	%Rec (Limits)	RPD (Limit)	Prepared: Analyzed	Qualifier
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Volatile Organic Compounds by GCMS - Batch B18H104

Blank (B18H104-BLK1)

Isopropylbenzene	ND	ug/L	0.500					08/08/18 :08/08/18	
4-Isopropyltoluene	ND	ug/L	0.500					08/08/18 :08/08/18	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.00					08/08/18 :08/08/18	
Methylene chloride	ND	ug/L	1.00					08/08/18 :08/08/18	
Naphthalene	ND	ug/L	0.500					08/08/18 :08/08/18	
n-Propylbenzene	ND	ug/L	0.500					08/08/18 :08/08/18	
Styrene	ND	ug/L	0.500					08/08/18 :08/08/18	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.500					08/08/18 :08/08/18	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.500					08/08/18 :08/08/18	
Tetrachloroethene	ND	ug/L	0.500					08/08/18 :08/08/18	
Toluene	ND	ug/L	0.500					08/08/18 :08/08/18	
1,2,3-Trichlorobenzene	ND	ug/L	0.500					08/08/18 :08/08/18	
1,2,4-Trichlorobenzene	ND	ug/L	0.500					08/08/18 :08/08/18	
1,1,1-Trichloroethane	ND	ug/L	0.500					08/08/18 :08/08/18	
1,1,2-Trichloroethane	ND	ug/L	0.500					08/08/18 :08/08/18	
Trichloroethene	ND	ug/L	0.500					08/08/18 :08/08/18	
Trichlorofluoromethane	ND	ug/L	0.500					08/08/18 :08/08/18	
1,2,3-Trichloropropane	ND	ug/L	0.500					08/08/18 :08/08/18	
1,2,4-Trimethylbenzene	ND	ug/L	0.500					08/08/18 :08/08/18	
1,3,5-Trimethylbenzene	ND	ug/L	0.500					08/08/18 :08/08/18	
Vinyl acetate	ND	ug/L	1.00					08/08/18 :08/08/18	
Vinyl chloride	ND	ug/L	0.500					08/08/18 :08/08/18	
m,p-Xylene	ND	ug/L	1.00					08/08/18 :08/08/18	
o-Xylene	ND	ug/L	0.500					08/08/18 :08/08/18	
Surrogate									
Dibromofluoromethane	42.4	ug/L		50.0		85% (80-120)		08/08/18 :08/08/18	
Toluene-d8	44.3	ug/L		50.0		89% (80-120)		08/08/18 :08/08/18	
4-Bromofluorobenzene	44.6	ug/L		50.0		89% (80-120)		08/08/18 :08/08/18	

LCS (B18H104-BS1)

Acetone	111.1	ug/L	20.0	100		111% (70-130)		08/08/18 :08/08/18	
Benzene	20.26	ug/L	0.500	20.0		101% (70-130)		08/08/18 :08/08/18	
Bromobenzene	17.93	ug/L	1.00	20.0		90% (70-130)		08/08/18 :08/08/18	
Bromochloromethane	21.05	ug/L	0.500	20.0		105% (70-130)		08/08/18 :08/08/18	
Bromodichloromethane	20.16	ug/L	0.500	20.0		101% (70-130)		08/08/18 :08/08/18	
Bromoform	19.40	ug/L	0.500	20.0		97% (70-130)		08/08/18 :08/08/18	
Bromomethane	17.10	ug/L	1.00	20.0		86% (70-130)		08/08/18 :08/08/18	
2-Butanone	123.8	ug/L	10.0	100		124% (70-130)		08/08/18 :08/08/18	
n-Butylbenzene	17.54	ug/L	0.500	20.0		88% (70-130)		08/08/18 :08/08/18	
sec-Butylbenzene	19.66	ug/L	0.500	20.0		98% (70-130)		08/08/18 :08/08/18	
tert-Butylbenzene	19.30	ug/L	0.500	20.0		96% (70-130)		08/08/18 :08/08/18	
Carbon disulfide	37.57	ug/L	2.00	40.0		94% (70-130)		08/08/18 :08/08/18	

Reported: 08/31/18 13:42

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Project: **Fire Station 2**
Work Order: **W18H036**

Client: **Coordinated Site Analysis**
Received: **08/03/18 18:58**

Volatile Organics - QC

Analyte	Result	Units	MRL	Spike Level	Source Result	%Rec (Limits)	RPD (Limit)	Prepared: Analyzed	Qualifier
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Volatile Organic Compounds by GCMS - Batch B18H104

LCS (B18H104-BS1)

Carbon tetrachloride	20.65	ug/L	0.500	20.0		103% (70-130)		08/08/18 :08/08/18	
Chlorobenzene	17.72	ug/L	0.500	20.0		89% (70-130)		08/08/18 :08/08/18	
Chloroethane	20.00	ug/L	0.500	20.0		100% (70-130)		08/08/18 :08/08/18	V1
Chloroform	20.53	ug/L	0.500	20.0		103% (70-130)		08/08/18 :08/08/18	
Chloromethane	17.04	ug/L	1.00	20.0		85% (70-130)		08/08/18 :08/08/18	
2-Chlorotoluene	18.18	ug/L	0.500	20.0		91% (70-130)		08/08/18 :08/08/18	
4-Chlorotoluene	18.24	ug/L	0.500	20.0		91% (70-130)		08/08/18 :08/08/18	
1,2-Dibromo-3-chloropropane	18.93	ug/L	0.500	20.0		95% (70-130)		08/08/18 :08/08/18	
Dibromochloromethane	20.70	ug/L	0.500	20.0		104% (70-130)		08/08/18 :08/08/18	
1,2-Dibromoethane	20.58	ug/L	1.00	20.0		103% (70-130)		08/08/18 :08/08/18	
Dibromomethane	20.50	ug/L	0.500	20.0		102% (70-130)		08/08/18 :08/08/18	
1,2-Dichlorobenzene	16.63	ug/L	0.500	20.0		83% (70-130)		08/08/18 :08/08/18	
1,3-Dichlorobenzene	17.24	ug/L	0.500	20.0		86% (70-130)		08/08/18 :08/08/18	
1,4-Dichlorobenzene	16.33	ug/L	0.500	20.0		82% (70-130)		08/08/18 :08/08/18	V3
Dichlorodifluoromethane	14.01	ug/L	0.500	20.0		70% (70-130)		08/08/18 :08/08/18	
1,1-Dichloroethane	19.95	ug/L	0.500	20.0		100% (70-130)		08/08/18 :08/08/18	
1,2-Dichloroethane	19.99	ug/L	0.500	20.0		100% (70-130)		08/08/18 :08/08/18	
1,1-Dichloroethene	19.45	ug/L	0.500	20.0		97% (70-130)		08/08/18 :08/08/18	
cis-1,2-Dichloroethene	19.89	ug/L	0.500	20.0		99% (70-130)		08/08/18 :08/08/18	
trans-1,2-Dichloroethene	20.59	ug/L	0.500	20.0		103% (70-130)		08/08/18 :08/08/18	
1,2-Dichloropropane	19.49	ug/L	0.500	20.0		97% (70-130)		08/08/18 :08/08/18	
1,3-Dichloropropane	20.29	ug/L	0.500	20.0		101% (70-130)		08/08/18 :08/08/18	
2,2-Dichloropropane	22.37	ug/L	0.500	20.0		112% (70-130)		08/08/18 :08/08/18	
1,1-Dichloropropene	20.48	ug/L	0.500	20.0		102% (70-130)		08/08/18 :08/08/18	
cis-1,3-Dichloropropene	20.85	ug/L	0.500	20.0		104% (70-130)		08/08/18 :08/08/18	
trans-1,3-Dichloropropene	20.85	ug/L	0.500	20.0		104% (70-130)		08/08/18 :08/08/18	
Ethylbenzene	18.21	ug/L	0.500	20.0		91% (70-130)		08/08/18 :08/08/18	
Hexachlorobutadiene	17.19	ug/L	0.500	20.0		86% (70-130)		08/08/18 :08/08/18	
2-Hexanone	120.7	ug/L	5.00	100		121% (70-130)		08/08/18 :08/08/18	
Isopropylbenzene	18.54	ug/L	0.500	20.0		93% (70-130)		08/08/18 :08/08/18	
4-Isopropyltoluene	17.60	ug/L	0.500	20.0		88% (70-130)		08/08/18 :08/08/18	
4-Methyl-2-pentanone (MIBK)	120.1	ug/L	5.00	100		120% (70-130)		08/08/18 :08/08/18	
Methylene chloride	19.36	ug/L	1.00	20.0		97% (70-130)		08/08/18 :08/08/18	
Naphthalene	18.44	ug/L	0.500	20.0		92% (70-130)		08/08/18 :08/08/18	
n-Propylbenzene	18.69	ug/L	0.500	20.0		93% (70-130)		08/08/18 :08/08/18	
Styrene	18.89	ug/L	0.500	20.0		94% (70-130)		08/08/18 :08/08/18	
1,1,1,2-Tetrachloroethane	20.38	ug/L	0.500	20.0		102% (70-130)		08/08/18 :08/08/18	
1,1,2,2-Tetrachloroethane	19.59	ug/L	0.500	20.0		98% (70-130)		08/08/18 :08/08/18	
Tetrachloroethene	19.75	ug/L	0.500	20.0		99% (70-130)		08/08/18 :08/08/18	
Toluene	19.63	ug/L	0.500	20.0		98% (70-130)		08/08/18 :08/08/18	
1,2,3-Trichlorobenzene	17.23	ug/L	0.500	20.0		86% (70-130)		08/08/18 :08/08/18	

Reported: 08/31/18 13:42

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Jennifer Shackelford

Jennifer Shackelford, Laboratory Coordinator QA/QC



City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656
ORELAP Certification ID 4023



Project: **Fire Station 2**
Work Order: **W18H036**

Client: **Coordinated Site Analysis**
Received: **08/03/18 18:58**

Volatile Organics - QC

Analyte	Result	Units	MRL	Spike Level	Source Result	%Rec (Limits)	RPD (Limit)	Prepared: Analyzed	Qualifier
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Volatile Organic Compounds by GCMS - Batch B18H104

LCS (B18H104-BS1)

1,2,4-Trichlorobenzene	16.94	ug/L	0.500	20.0		85% (70-130)		08/08/18 :08/08/18	
1,1,1-Trichloroethane	20.10	ug/L	0.500	20.0		100% (70-130)		08/08/18 :08/08/18	
1,1,2-Trichloroethane	19.80	ug/L	0.500	20.0		99% (70-130)		08/08/18 :08/08/18	
Trichloroethene	20.29	ug/L	0.500	20.0		101% (70-130)		08/08/18 :08/08/18	
Trichlorofluoromethane	20.55	ug/L	0.500	20.0		103% (70-130)		08/08/18 :08/08/18	
1,2,3-Trichloropropane	20.07	ug/L	0.500	20.0		100% (70-130)		08/08/18 :08/08/18	
1,2,4-Trimethylbenzene	19.58	ug/L	0.500	20.0		98% (70-130)		08/08/18 :08/08/18	
1,3,5-Trimethylbenzene	19.02	ug/L	0.500	20.0		95% (70-130)		08/08/18 :08/08/18	
Vinyl acetate	91.18	ug/L	1.00	80.0		114% (70-130)		08/08/18 :08/08/18	
Vinyl chloride	19.25	ug/L	0.500	20.0		96% (70-130)		08/08/18 :08/08/18	
m,p-Xylene	37.68	ug/L	1.00	40.0		94% (70-130)		08/08/18 :08/08/18	
o-Xylene	17.80	ug/L	0.500	20.0		89% (70-130)		08/08/18 :08/08/18	
Surrogate									
Dibromofluoromethane	42.9	ug/L		50.0		86% (80-120)		08/08/18 :08/08/18	
Toluene-d8	44.1	ug/L		50.0		88% (80-120)		08/08/18 :08/08/18	
4-Bromofluorobenzene	46.9	ug/L		50.0		94% (80-120)		08/08/18 :08/08/18	

Duplicate (B18H104-DUP1)

Source: W18H045-01

Acetone	1775	ug/L	200		1864		5 (20)	08/08/18 :08/08/18	
Benzene	ND	ug/L	5.00		ND		(20)	08/08/18 :08/08/18	
Bromobenzene	ND	ug/L	10.0		ND		(20)	08/08/18 :08/08/18	
Bromochloromethane	ND	ug/L	5.00		ND		(20)	08/08/18 :08/08/18	
Bromodichloromethane	ND	ug/L	5.00		ND		(20)	08/08/18 :08/08/18	
Bromoform	ND	ug/L	5.00		ND		(20)	08/08/18 :08/08/18	
Bromomethane	ND	ug/L	10.0		ND		(20)	08/08/18 :08/08/18	
2-Butanone	ND	ug/L	100		ND		(20)	08/08/18 :08/08/18	
n-Butylbenzene	ND	ug/L	5.00		ND		(20)	08/08/18 :08/08/18	
sec-Butylbenzene	ND	ug/L	5.00		ND		(20)	08/08/18 :08/08/18	
tert-Butylbenzene	ND	ug/L	5.00		ND		(20)	08/08/18 :08/08/18	
Carbon disulfide	ND	ug/L	20.0		ND		(20)	08/08/18 :08/08/18	
Carbon tetrachloride	ND	ug/L	5.00		ND		(20)	08/08/18 :08/08/18	
Chlorobenzene	ND	ug/L	5.00		ND		(20)	08/08/18 :08/08/18	
Chloroethane	ND	ug/L	5.00		ND		(20)	08/08/18 :08/08/18	
Chloroform	23.70	ug/L	5.00		25.90		9 (20)	08/08/18 :08/08/18	
Chloromethane	ND	ug/L	10.0		ND		(20)	08/08/18 :08/08/18	
2-Chlorotoluene	ND	ug/L	5.00		ND		(20)	08/08/18 :08/08/18	
4-Chlorotoluene	ND	ug/L	5.00		ND		(20)	08/08/18 :08/08/18	
1,2-Dibromo-3-chloropropane	ND	ug/L	5.00		ND		(20)	08/08/18 :08/08/18	
Dibromochloromethane	ND	ug/L	5.00		ND		(20)	08/08/18 :08/08/18	
1,2-Dibromoethane	ND	ug/L	10.0		ND		(20)	08/08/18 :08/08/18	
Dibromomethane	ND	ug/L	5.00		ND		(20)	08/08/18 :08/08/18	
1,2-Dichlorobenzene	ND	ug/L	5.00		ND		(20)	08/08/18 :08/08/18	

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Jennifer Shackelford

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Water Pollution Control Laboratory

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ORELAP Certification ID 4023



Project: **Fire Station 2**
Work Order: **W18H036**

Client: **Coordinated Site Analysis**
Received: **08/03/18 18:58**

Volatile Organics - QC

Analyte	Result	Units	MRL	Spike Level	Source Result	%Rec (Limits)	RPD (Limit)	Prepared: Analyzed	Qualifier
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Volatile Organic Compounds by GCMS - Batch B18H104

Duplicate (B18H104-DUP1)

Source: W18H045-01

1,3-Dichlorobenzene	ND	ug/L	5.00		ND	(20)	08/08/18 :08/08/18	
1,4-Dichlorobenzene	ND	ug/L	5.00		ND	(20)	08/08/18 :08/08/18	V3
Dichlorodifluoromethane	ND	ug/L	5.00		ND	(20)	08/08/18 :08/08/18	
1,1-Dichloroethane	ND	ug/L	5.00		ND	(20)	08/08/18 :08/08/18	
1,2-Dichloroethane	ND	ug/L	5.00		ND	(20)	08/08/18 :08/08/18	
1,1-Dichloroethene	ND	ug/L	5.00		ND	(20)	08/08/18 :08/08/18	
cis-1,2-Dichloroethene	ND	ug/L	5.00		ND	(20)	08/08/18 :08/08/18	
trans-1,2-Dichloroethene	ND	ug/L	5.00		ND	(20)	08/08/18 :08/08/18	
1,2-Dichloropropane	ND	ug/L	5.00		ND	(20)	08/08/18 :08/08/18	
1,3-Dichloropropane	ND	ug/L	5.00		ND	(20)	08/08/18 :08/08/18	
2,2-Dichloropropane	ND	ug/L	5.00		ND	(20)	08/08/18 :08/08/18	
1,1-Dichloropropene	ND	ug/L	5.00		ND	(20)	08/08/18 :08/08/18	
cis-1,3-Dichloropropene	ND	ug/L	5.00		ND	(20)	08/08/18 :08/08/18	
trans-1,3-Dichloropropene	ND	ug/L	5.00		ND	(20)	08/08/18 :08/08/18	
Ethylbenzene	ND	ug/L	5.00		5.000	(20)	08/08/18 :08/08/18	
Hexachlorobutadiene	ND	ug/L	5.00		ND	(20)	08/08/18 :08/08/18	
2-Hexanone	ND	ug/L	50.0		ND	(20)	08/08/18 :08/08/18	
Isopropylbenzene	ND	ug/L	5.00		ND	(20)	08/08/18 :08/08/18	
4-Isopropyltoluene	ND	ug/L	5.00		ND	(20)	08/08/18 :08/08/18	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	50.0		ND	(20)	08/08/18 :08/08/18	
Methylene chloride	ND	ug/L	10.0		ND	(20)	08/08/18 :08/08/18	
Naphthalene	ND	ug/L	5.00		ND	(20)	08/08/18 :08/08/18	
n-Propylbenzene	ND	ug/L	5.00		ND	(20)	08/08/18 :08/08/18	
Styrene	ND	ug/L	5.00		ND	(20)	08/08/18 :08/08/18	
1,1,1,2-Tetrachloroethane	ND	ug/L	5.00		ND	(20)	08/08/18 :08/08/18	
1,1,2,2-Tetrachloroethane	ND	ug/L	5.00		ND	(20)	08/08/18 :08/08/18	
Tetrachloroethene	21.90	ug/L	5.00		23.00	5 (20)	08/08/18 :08/08/18	
Toluene	39.60	ug/L	5.00		42.10	6 (20)	08/08/18 :08/08/18	
1,2,3-Trichlorobenzene	ND	ug/L	5.00		ND	(20)	08/08/18 :08/08/18	
1,2,4-Trichlorobenzene	ND	ug/L	5.00		ND	(20)	08/08/18 :08/08/18	
1,1,1-Trichloroethane	ND	ug/L	5.00		ND	(20)	08/08/18 :08/08/18	
1,1,2-Trichloroethane	ND	ug/L	5.00		ND	(20)	08/08/18 :08/08/18	
Trichloroethene	ND	ug/L	5.00		ND	(20)	08/08/18 :08/08/18	
Trichlorofluoromethane	ND	ug/L	5.00		ND	(20)	08/08/18 :08/08/18	
1,2,3-Trichloropropane	ND	ug/L	5.00		ND	(20)	08/08/18 :08/08/18	
1,2,4-Trimethylbenzene	9.000	ug/L	5.00		9.300	3 (20)	08/08/18 :08/08/18	
1,3,5-Trimethylbenzene	ND	ug/L	5.00		ND	(20)	08/08/18 :08/08/18	
Vinyl acetate	ND	ug/L	10.0		ND	(20)	08/08/18 :08/08/18	
Vinyl chloride	ND	ug/L	5.00		ND	(20)	08/08/18 :08/08/18	
m,p-Xylene	24.10	ug/L	10.0		26.10	8 (20)	08/08/18 :08/08/18	
o-Xylene	11.20	ug/L	5.00		12.10	8 (20)	08/08/18 :08/08/18	

Reported: 08/31/18 13:42

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Water Pollution Control Laboratory

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ORELAP Certification ID 4023



Project: **Fire Station 2**
Work Order: **W18H036**

Client: **Coordinated Site Analysis**
Received: **08/03/18 18:58**

Volatile Organics - QC

Analyte	Result	Units	MRL	Spike Level	Source Result	%Rec (Limits)	RPD (Limit)	Prepared: Analyzed	Qualifier
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Volatile Organic Compounds by GCMS - Batch B18H104

Duplicate (B18H104-DUP1) Source: **W18H045-01**

Surrogate

Dibromofluoromethane	43.6	ug/L		50.0		87% (80-120)		08/08/18 :08/08/18	
Toluene-d8	44.3	ug/L		50.0		89% (80-120)		08/08/18 :08/08/18	
4-Bromofluorobenzene	45.2	ug/L		50.0		90% (80-120)		08/08/18 :08/08/18	

Matrix Spike (B18H104-MS1) Source: **W18H036-05**

Acetone	106.7	ug/L	20.0	100	ND	107% (70-130)		08/08/18 :08/08/18	
Benzene	20.24	ug/L	0.500	20.0	ND	101% (70-130)		08/08/18 :08/08/18	
Bromobenzene	17.84	ug/L	1.00	20.0	ND	89% (70-130)		08/08/18 :08/08/18	
Bromochloromethane	20.52	ug/L	0.500	20.0	ND	103% (70-130)		08/08/18 :08/08/18	
Bromodichloromethane	19.19	ug/L	0.500	20.0	ND	96% (70-130)		08/08/18 :08/08/18	
Bromoform	18.53	ug/L	0.500	20.0	ND	93% (70-130)		08/08/18 :08/08/18	
Bromomethane	17.92	ug/L	1.00	20.0	ND	90% (70-130)		08/08/18 :08/08/18	
2-Butanone	112.9	ug/L	10.0	100	ND	113% (70-130)		08/08/18 :08/08/18	
n-Butylbenzene	17.09	ug/L	0.500	20.0	ND	85% (70-130)		08/08/18 :08/08/18	
sec-Butylbenzene	19.98	ug/L	0.500	20.0	ND	100% (70-130)		08/08/18 :08/08/18	
tert-Butylbenzene	19.32	ug/L	0.500	20.0	ND	97% (70-130)		08/08/18 :08/08/18	
Carbon disulfide	39.12	ug/L	2.00	40.0	ND	98% (70-130)		08/08/18 :08/08/18	
Carbon tetrachloride	21.37	ug/L	0.500	20.0	ND	107% (70-130)		08/08/18 :08/08/18	
Chlorobenzene	17.61	ug/L	0.500	20.0	ND	88% (70-130)		08/08/18 :08/08/18	
Chloroethane	21.18	ug/L	0.500	20.0	ND	106% (70-130)		08/08/18 :08/08/18	V1
Chloroform	22.24	ug/L	0.500	20.0	1.370	104% (70-130)		08/08/18 :08/08/18	
Chloromethane	17.21	ug/L	1.00	20.0	ND	86% (70-130)		08/08/18 :08/08/18	
2-Chlorotoluene	18.19	ug/L	0.500	20.0	ND	91% (70-130)		08/08/18 :08/08/18	
4-Chlorotoluene	18.34	ug/L	0.500	20.0	ND	92% (70-130)		08/08/18 :08/08/18	
1,2-Dibromo-3-chloropropane	16.77	ug/L	0.500	20.0	ND	84% (70-130)		08/08/18 :08/08/18	
Dibromochloromethane	19.68	ug/L	0.500	20.0	ND	98% (70-130)		08/08/18 :08/08/18	
1,2-Dibromoethane	19.73	ug/L	1.00	20.0	ND	99% (70-130)		08/08/18 :08/08/18	
Dibromomethane	19.56	ug/L	0.500	20.0	ND	98% (70-130)		08/08/18 :08/08/18	
1,2-Dichlorobenzene	16.07	ug/L	0.500	20.0	ND	80% (70-130)		08/08/18 :08/08/18	
1,3-Dichlorobenzene	16.69	ug/L	0.500	20.0	ND	83% (70-130)		08/08/18 :08/08/18	
1,4-Dichlorobenzene	16.09	ug/L	0.500	20.0	ND	80% (70-130)		08/08/18 :08/08/18	V3
Dichlorodifluoromethane	14.74	ug/L	0.500	20.0	ND	74% (70-130)		08/08/18 :08/08/18	
1,1-Dichloroethane	19.95	ug/L	0.500	20.0	ND	100% (70-130)		08/08/18 :08/08/18	
1,2-Dichloroethane	18.86	ug/L	0.500	20.0	ND	94% (70-130)		08/08/18 :08/08/18	
1,1-Dichloroethene	20.92	ug/L	0.500	20.0	ND	105% (70-130)		08/08/18 :08/08/18	
cis-1,2-Dichloroethene	19.82	ug/L	0.500	20.0	ND	99% (70-130)		08/08/18 :08/08/18	
trans-1,2-Dichloroethene	20.88	ug/L	0.500	20.0	ND	104% (70-130)		08/08/18 :08/08/18	
1,2-Dichloropropane	19.50	ug/L	0.500	20.0	ND	98% (70-130)		08/08/18 :08/08/18	
1,3-Dichloropropane	19.57	ug/L	0.500	20.0	ND	98% (70-130)		08/08/18 :08/08/18	
2,2-Dichloropropane	21.68	ug/L	0.500	20.0	ND	108% (70-130)		08/08/18 :08/08/18	
1,1-Dichloropropene	20.77	ug/L	0.500	20.0	ND	104% (70-130)		08/08/18 :08/08/18	

Reported: 08/31/18 13:42

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ORELAP Certification ID 4023



Project: **Fire Station 2**
Work Order: **W18H036**

Client: **Coordinated Site Analysis**
Received: **08/03/18 18:58**

Volatile Organics - QC

Analyte	Result	Units	MRL	Spike Level	Source Result	%Rec (Limits)	RPD (Limit)	Prepared: Analyzed	Qualifier
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Volatile Organic Compounds by GCMS - Batch B18H104

Matrix Spike (B18H104-MS1)

Source: W18H036-05

cis-1,3-Dichloropropene	20.04	ug/L	0.500	20.0	ND	100% (70-130)		08/08/18 :08/08/18	
trans-1,3-Dichloropropene	19.76	ug/L	0.500	20.0	ND	99% (70-130)		08/08/18 :08/08/18	
Ethylbenzene	18.24	ug/L	0.500	20.0	ND	91% (70-130)		08/08/18 :08/08/18	
Hexachlorobutadiene	16.85	ug/L	0.500	20.0	ND	84% (70-130)		08/08/18 :08/08/18	
2-Hexanone	106.1	ug/L	5.00	100	ND	106% (70-130)		08/08/18 :08/08/18	
Isopropylbenzene	18.50	ug/L	0.500	20.0	ND	92% (70-130)		08/08/18 :08/08/18	
4-Isopropyltoluene	17.10	ug/L	0.500	20.0	ND	86% (70-130)		08/08/18 :08/08/18	
4-Methyl-2-pentanone (MIBK)	109.6	ug/L	5.00	100	ND	110% (70-130)		08/08/18 :08/08/18	
Methylene chloride	18.94	ug/L	1.00	20.0	ND	95% (70-130)		08/08/18 :08/08/18	
Naphthalene	16.94	ug/L	0.500	20.0	ND	85% (70-130)		08/08/18 :08/08/18	
n-Propylbenzene	19.20	ug/L	0.500	20.0	ND	96% (70-130)		08/08/18 :08/08/18	
Styrene	18.74	ug/L	0.500	20.0	ND	94% (70-130)		08/08/18 :08/08/18	
1,1,1,2-Tetrachloroethane	19.94	ug/L	0.500	20.0	ND	100% (70-130)		08/08/18 :08/08/18	
1,1,2,2-Tetrachloroethane	18.55	ug/L	0.500	20.0	ND	93% (70-130)		08/08/18 :08/08/18	
Tetrachloroethene	21.34	ug/L	0.500	20.0	0.8400	102% (70-130)		08/08/18 :08/08/18	
Toluene	19.67	ug/L	0.500	20.0	ND	98% (70-130)		08/08/18 :08/08/18	
1,2,3-Trichlorobenzene	16.56	ug/L	0.500	20.0	ND	83% (70-130)		08/08/18 :08/08/18	
1,2,4-Trichlorobenzene	16.41	ug/L	0.500	20.0	ND	82% (70-130)		08/08/18 :08/08/18	
1,1,1-Trichloroethane	20.87	ug/L	0.500	20.0	ND	104% (70-130)		08/08/18 :08/08/18	
1,1,2-Trichloroethane	19.21	ug/L	0.500	20.0	ND	96% (70-130)		08/08/18 :08/08/18	
Trichloroethene	20.80	ug/L	0.500	20.0	ND	104% (70-130)		08/08/18 :08/08/18	
Trichlorofluoromethane	21.22	ug/L	0.500	20.0	ND	106% (70-130)		08/08/18 :08/08/18	
1,2,3-Trichloropropane	18.65	ug/L	0.500	20.0	ND	93% (70-130)		08/08/18 :08/08/18	
1,2,4-Trimethylbenzene	19.41	ug/L	0.500	20.0	ND	97% (70-130)		08/08/18 :08/08/18	
1,3,5-Trimethylbenzene	19.27	ug/L	0.500	20.0	ND	96% (70-130)		08/08/18 :08/08/18	
Vinyl acetate	82.48	ug/L	1.00	80.0	ND	103% (70-130)		08/08/18 :08/08/18	
Vinyl chloride	19.37	ug/L	0.500	20.0	ND	97% (70-130)		08/08/18 :08/08/18	
m,p-Xylene	37.28	ug/L	1.00	40.0	ND	93% (70-130)		08/08/18 :08/08/18	
o-Xylene	17.47	ug/L	0.500	20.0	ND	87% (70-130)		08/08/18 :08/08/18	
Surrogate									
Dibromofluoromethane	43.1	ug/L		50.0		86% (80-120)		08/08/18 :08/08/18	
Toluene-d8	43.7	ug/L		50.0		87% (80-120)		08/08/18 :08/08/18	
4-Bromofluorobenzene	47.3	ug/L		50.0		95% (80-120)		08/08/18 :08/08/18	

Reported: 08/31/18 13:42

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Jennifer Shackelford

Jennifer Shackelford, Laboratory Coordinator QA/QC



City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656
ORELAP Certification ID 4023



Project: **Fire Station 2**
Work Order: **W18H036**

Client: **Coordinated Site Analysis**
Received: **08/03/18 18:58**

Semivolatile Organics - SIM - QC

Analyte	Result	Units	MRL	Spike Level	Source Result	%Rec (Limits)	RPD (Limit)	Prepared: Analyzed	Qualifier
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Polynuclear Aromatic Hydrocarbons by GCMS-SIM - Batch B18H108

Blank (B18H108-BLK1)

Acenaphthene	ND	ug/L	0.050					08/08/18 :08/08/18	
Acenaphthylene	ND	ug/L	0.050					08/08/18 :08/08/18	
Anthracene	ND	ug/L	0.050					08/08/18 :08/08/18	
Benzo(a)anthracene	ND	ug/L	0.050					08/08/18 :08/08/18	
Benzo(a)pyrene	ND	ug/L	0.050					08/08/18 :08/08/18	
Benzo(b)fluoranthene	ND	ug/L	0.050					08/08/18 :08/08/18	
Benzo(g,h,i)perylene	ND	ug/L	0.050					08/08/18 :08/08/18	
Benzo(k)fluoranthene	ND	ug/L	0.050					08/08/18 :08/08/18	
Chrysene	ND	ug/L	0.050					08/08/18 :08/08/18	
Dibenzo(a,h)anthracene	ND	ug/L	0.050					08/08/18 :08/08/18	
Fluoranthene	ND	ug/L	0.050					08/08/18 :08/08/18	
Fluorene	ND	ug/L	0.050					08/08/18 :08/08/18	
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.050					08/08/18 :08/08/18	
Naphthalene	ND	ug/L	0.050					08/08/18 :08/08/18	
Phenanthrene	ND	ug/L	0.050					08/08/18 :08/08/18	
Pyrene	ND	ug/L	0.050					08/08/18 :08/08/18	

Surrogate

2-Methylnaphthalene-d10	0.24	ug/L		0.229		106% (31-164)		08/08/18 :08/08/18	
Fluoranthene-d10	0.25	ug/L		0.229		110% (65-145)		08/08/18 :08/08/18	

LCS (B18H108-BS1)

Acenaphthene	0.109	ug/L	0.050	0.114		96% (67-125)		08/08/18 :08/08/18	
Acenaphthylene	0.113	ug/L	0.050	0.114		99% (64-138)		08/08/18 :08/08/18	
Anthracene	0.115	ug/L	0.050	0.114		100% (65-143)		08/08/18 :08/08/18	
Benzo(a)anthracene	0.110	ug/L	0.050	0.114		96% (80-130)		08/08/18 :08/08/18	
Benzo(a)pyrene	0.114	ug/L	0.050	0.114		100% (74-131)		08/08/18 :08/08/18	
Benzo(b)fluoranthene	0.111	ug/L	0.050	0.114		98% (67-128)		08/08/18 :08/08/18	
Benzo(g,h,i)perylene	0.116	ug/L	0.050	0.114		102% (57-137)		08/08/18 :08/08/18	
Benzo(k)fluoranthene	0.112	ug/L	0.050	0.114		98% (63-140)		08/08/18 :08/08/18	
Chrysene	0.115	ug/L	0.050	0.114		101% (80-134)		08/08/18 :08/08/18	
Dibenzo(a,h)anthracene	0.118	ug/L	0.050	0.114		103% (56-138)		08/08/18 :08/08/18	
Fluoranthene	0.117	ug/L	0.050	0.114		102% (70-150)		08/08/18 :08/08/18	
Fluorene	0.115	ug/L	0.050	0.114		101% (64-130)		08/08/18 :08/08/18	
Indeno(1,2,3-cd)pyrene	0.115	ug/L	0.050	0.114		101% (58-138)		08/08/18 :08/08/18	
Naphthalene	0.102	ug/L	0.050	0.114		90% (53-134)		08/08/18 :08/08/18	
Phenanthrene	0.119	ug/L	0.050	0.114		104% (73-132)		08/08/18 :08/08/18	
Pyrene	0.117	ug/L	0.050	0.114		103% (69-153)		08/08/18 :08/08/18	

Surrogate

2-Methylnaphthalene-d10	0.22	ug/L		0.229		97% (31-164)		08/08/18 :08/08/18	
Fluoranthene-d10	0.25	ug/L		0.229		109% (65-145)		08/08/18 :08/08/18	

Matrix Spike (B18H108-MS1)

Source: W18H042-01

Reported: 08/31/18 13:42

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Jennifer Shackelford

Jennifer Shackelford, Laboratory Coordinator QA/QC



City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656
ORELAP Certification ID 4023



Project: **Fire Station 2**
Work Order: **W18H036**

Client: **Coordinated Site Analysis**
Received: **08/03/18 18:58**

Semivolatile Organics - SIM - QC

Analyte	Result	Units	MRL	Spike Level	Source Result	%Rec (Limits)	RPD (Limit)	Prepared: Analyzed	Qualifier
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Polynuclear Aromatic Hydrocarbons by GCMS-SIM - Batch B18H108

Matrix Spike (B18H108-MS1)

Source: W18H042-01

Acenaphthene	0.118	ug/L	0.050	0.114	ND	104% (67-125)		08/08/18 :08/08/18	
Acenaphthylene	0.117	ug/L	0.050	0.114	ND	103% (64-138)		08/08/18 :08/08/18	
Anthracene	0.119	ug/L	0.050	0.114	ND	104% (65-143)		08/08/18 :08/08/18	
Benzo(a)anthracene	0.110	ug/L	0.050	0.114	ND	96% (80-130)		08/08/18 :08/08/18	
Benzo(a)pyrene	0.110	ug/L	0.050	0.114	ND	96% (74-131)		08/08/18 :08/08/18	
Benzo(b)fluoranthene	0.108	ug/L	0.050	0.114	ND	95% (67-128)		08/08/18 :08/08/18	
Benzo(g,h,i)perylene	0.105	ug/L	0.050	0.114	ND	91% (57-137)		08/08/18 :08/08/18	
Benzo(k)fluoranthene	0.109	ug/L	0.050	0.114	ND	95% (63-140)		08/08/18 :08/08/18	
Chrysene	0.113	ug/L	0.050	0.114	ND	99% (80-134)		08/08/18 :08/08/18	
Dibenzo(a,h)anthracene	0.104	ug/L	0.050	0.114	ND	91% (56-138)		08/08/18 :08/08/18	
Fluoranthene	0.119	ug/L	0.050	0.114	ND	104% (70-150)		08/08/18 :08/08/18	
Fluorene	0.118	ug/L	0.050	0.114	ND	104% (64-130)		08/08/18 :08/08/18	
Indeno(1,2,3-cd)pyrene	0.103	ug/L	0.050	0.114	ND	90% (58-138)		08/08/18 :08/08/18	
Naphthalene	0.118	ug/L	0.050	0.114	ND	103% (53-134)		08/08/18 :08/08/18	
Phenanthrene	0.122	ug/L	0.050	0.114	ND	107% (73-132)		08/08/18 :08/08/18	
Pyrene	0.122	ug/L	0.050	0.114	ND	107% (69-153)		08/08/18 :08/08/18	
Surrogate									
2-Methylnaphthalene-d10	0.24	ug/L		0.229		106% (31-164)		08/08/18 :08/08/18	
Fluoranthene-d10	0.26	ug/L		0.229		113% (65-145)		08/08/18 :08/08/18	

Matrix Spike Dup (B18H108-MSD1)

Source: W18H042-01

Acenaphthene	0.122	ug/L	0.050	0.114	ND	107% (67-125)	3 (30)	08/08/18 :08/08/18	
Acenaphthylene	0.121	ug/L	0.050	0.114	ND	106% (64-138)	3 (30)	08/08/18 :08/08/18	
Anthracene	0.123	ug/L	0.050	0.114	ND	108% (65-143)	3 (30)	08/08/18 :08/08/18	
Benzo(a)anthracene	0.115	ug/L	0.050	0.114	ND	100% (80-130)	4 (30)	08/08/18 :08/08/18	
Benzo(a)pyrene	0.115	ug/L	0.050	0.114	ND	100% (74-131)	4 (30)	08/08/18 :08/08/18	
Benzo(b)fluoranthene	0.113	ug/L	0.050	0.114	ND	98% (67-128)	4 (30)	08/08/18 :08/08/18	
Benzo(g,h,i)perylene	0.108	ug/L	0.050	0.114	ND	95% (57-137)	3 (30)	08/08/18 :08/08/18	
Benzo(k)fluoranthene	0.113	ug/L	0.050	0.114	ND	99% (63-140)	4 (30)	08/08/18 :08/08/18	
Chrysene	0.119	ug/L	0.050	0.114	ND	104% (80-134)	5 (30)	08/08/18 :08/08/18	
Dibenzo(a,h)anthracene	0.106	ug/L	0.050	0.114	ND	93% (56-138)	2 (30)	08/08/18 :08/08/18	
Fluoranthene	0.123	ug/L	0.050	0.114	ND	108% (70-150)	4 (30)	08/08/18 :08/08/18	
Fluorene	0.123	ug/L	0.050	0.114	ND	108% (64-130)	4 (30)	08/08/18 :08/08/18	
Indeno(1,2,3-cd)pyrene	0.106	ug/L	0.050	0.114	ND	93% (58-138)	3 (30)	08/08/18 :08/08/18	
Naphthalene	0.122	ug/L	0.050	0.114	ND	106% (53-134)	3 (30)	08/08/18 :08/08/18	
Phenanthrene	0.127	ug/L	0.050	0.114	ND	111% (73-132)	4 (30)	08/08/18 :08/08/18	
Pyrene	0.125	ug/L	0.050	0.114	ND	110% (69-153)	2 (30)	08/08/18 :08/08/18	
Surrogate									
2-Methylnaphthalene-d10	0.27	ug/L		0.229		117% (31-164)		08/08/18 :08/08/18	
Fluoranthene-d10	0.27	ug/L		0.229		119% (65-145)		08/08/18 :08/08/18	

Reported: 08/31/18 13:42

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Jennifer Shackelford

Jennifer Shackelford, Laboratory Coordinator QA/QC



City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656
ORELAP Certification ID 4023



Project: **Fire Station 2**
Work Order: **W18H036**

Client: Coordinated Site Analysis
Received: 08/03/18 18:58

Qualifiers

F7 This sample underwent silica gel clean-up.
LF1 Filtration for dissolved metals occurred in the laboratory within 24 hours of sample receipt.
M8 The matrix duplicate control limit is not applicable at concentrations less than 5 times the reporting limit.
V1 Continuing calibration verification was high; sample results for this analyte may be high estimates.
V3 Continuing calibration verification was low; sample results for this analyte may be low estimates.

Definitions

DET	Analyte Detected	ND	Analyte Not Detected at or above the reporting limit
MRL	Method Reporting Limit	MDL	Method Detection Limit
NR	Not Reportable	dry	Sample results reported on a dry weight basis
% Rec.	Percent Recovery	RPD	Relative Percent Difference
*	This analyte is not certified under NELAP		

Reported: 08/31/18 13:42

Jennifer Shackelford, Laboratory Coordinator QA/QC

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Water Pollution Control Laboratory
6543 N. Burlington Ave.
Portland, Oregon 97203-4552
Sample Custodian: (503) 823-5696
General Lab: (503) 823-5681



City of Portland Chain-of-Custody



Bureau of Environmental Services

Date: 8/3/18

Lab Work Order #: W10H036

Collected By: _____

Contact Info: _____

Client Name: **Coordinated Site Analysis**

Project Number (if applicable): 7ESFRC500013

Project Name: Fire Station 2

CSA Contact Name: Bryan Allen

Requested Analyses

Lab Number	Follow-up Tests:					Requested Analytes															Turn-Around-Time Request:		
	<div><input type="checkbox"/> Run TCLP metals if limit exceeded</div> <div><input type="checkbox"/> Run NWTPH-Dx and NWTPH-Gx if detects on NWTPH-HCID</div> <div><input type="checkbox"/> Run PAHs if detects on NWTPH-Dx</div> <div><input type="checkbox"/> Run VOCs if detects on NWTPH-Gx</div>					NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	PCB Aroclors (low-level)	PAHs	Priority Pollutant 13 Metals	RCRA 8 Metals	Total Metals	(As, Cd, Cr, Cu, Pb, Hg, Zn)	Total Metals (Cd, Cr, Pb)	VOCs	TOC	PFAS	Metals Dissolved RCRA 8	Total Metal Cu, Ni, Zn	Total Metal Dissolved Cu, Ni, Zn	HOLD	# of Containers
01	MW1-001	8/3/18	15:15	G	W		X			X					X	X	X	X	X	X		12	
02	MW2-001	8/3/18	13:34	G	W		X			X					X	X	X	X	X	X		11	
03	MW3-001	8/3/18	15:45	G	W		X			X					X	X	X	X	X	X		11	
04	MW4-001	8/3/18	10:48	G	W		X			X					X	X	X	X	X	X		11	
05	MW5-001	8/3/18	15:45	G	W		X			X					X	X	X	X	X	X		11	
06	Trip Blank	8/3/18	—	G	W										X		X ^{RA}					3	1
07	MW1 Rinsate Blank	8/3/18	17:35	G	W										X		X					6	
	CB-1 ^{RA}	8/3/18		CB	5 ^{RA}					X ^{RA}	X ^{RA}				X ^{RA}		X ^{RA}	X ^{RA}	X ^{RA}				
08	Field Blank	8/3/18	—	—	W												X					1	

Relinquished By:

Signature: [Signature]
Printed Name: Bryan Allen

Date: 8/3/18
Time: 18:58

Received By:

Signature: [Signature]
Printed Name: R. Katzenm
Date: 8/4/18
Time: 0700

Relinquished By:

Signature: _____
Printed Name: _____
Date: _____
Time: _____

Received By:

Signature: _____
Printed Name: _____
Date: _____
Time: _____

WPCL Cooler Receipt Form

Work Order Number: W184036

Cooler Receipt Form Filled Out By: RA

Project: Fire station 2

Sample transport: Received on ice _____ Courier _____

Received from CBWTP fridge _____ Directly from field _____

Temperature (°C): 4 Received from SR fridge.

	Yes	No	N/A
Is the COC present and signed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are sample bottles intact?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do the COC and sample labels match?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the appropriate containers used?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Are samples appropriately preserved?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do VOA vials or alkalinity bottles have Headspace?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Are samples received within holding times?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Pres. #	Preservative	LIMS ID	Standard Preservation Amounts
1	HNO ₃ (1:1) to pH <2	1800469	0.5mL/250mL; 1.0mL/500mL; 4-5 drops/50mL centrifuge tube
2	H ₂ SO ₄ (18N) to pH <2		0.4mL/250mL; 0.8mL/500mL; 1.6mL/1000mL
3	HCl (1:1) to pH <2		1.0mL/500mL; 2.0mL/1000mL
4	HCl (1:1) to pH 2-3	1800556	For TOC: 2-5 drops/250mL
5	NaOH (pellets) to pH >12		4-10 pellets/500mL; 8-20 pellets/1000mL

Date	Time	Analyst	Sample LIMS ID	Bottle ID	Pres. #	Comments
8/4/18	1045	RA	W184036-01+005	B	1	
				F	4	
	1150			A	1	

Comments: Sample containers missing for samples 07 and 08.



August 31, 2018

Service Request No:K1807311

Jennifer Shackelford
City of Portland
6543 N. Burlington Ave
Portland, OR 97203

Laboratory Results for: Fire Station 2

Dear Jennifer,

Enclosed are the results of the sample(s) submitted to our laboratory August 06, 2018
For your reference, these analyses have been assigned our service request number **K1807311**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3364. You may also contact me via email at howard.holmes@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

for

Howard Holmes
Project Manager

ADDRESS 1317 S. 13th Avenue, Kelso, WA 98626
PHONE +1 360 577 7222 | FAX +1 360 636 1068
ALS Group USA, Corp.
dba ALS Environmental



Narrative Documents

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Client: Portland, City of
Project: Fire Station 2
Sample Matrix: Water

Service Request: K1807311
Date Received: 08/06/2018

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Laboratory Duplicate (DUP), Matrix Spike (MS), Matrix/Duplicate Matrix Spike (MS/DMS), Laboratory Control Sample (LCS), and Laboratory/Duplicate Laboratory Control Sample (LCS/DLCS).

Sample Receipt:

Seven water samples were received for analysis at ALS Environmental on 08/06/2018. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Organic LC:

No significant anomalies were noted with this analysis.



Approved by _____

Date 08/31/2018

SAMPLE DETECTION SUMMARY

CLIENT ID: W18H036-01	Lab ID: K1807311-001
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Analyte	Results	Flag	MDL	MRL	Units	Method
Perfluorobutane sulfonic acid (PFBS)	12		0.90	4.2	ng/L	PFC/537M
Perfluorohexane sulfonic acid (PFHxS)	70		0.94	4.2	ng/L	PFC/537M
Perfluoroheptane sulfonic acid (PFHpS)	3.9	J	0.88	4.2	ng/L	PFC/537M
Perfluorooctane sulfonic acid (PFOS)	160		1.0	4.2	ng/L	PFC/537M
Perfluorobutanoic acid (PFBA)	6.0	J	2.7	8.5	ng/L	PFC/537M
Perfluoropentanoic acid (PFPeA)	11		1.1	4.2	ng/L	PFC/537M
Perfluorohexanoic acid (PFHxA)	26		0.92	4.2	ng/L	PFC/537M
Perfluoroheptanoic acid (PFHpA)	7.9		1.2	4.2	ng/L	PFC/537M
Perfluorooctanoic acid (PFOA)	18		0.46	1.7	ng/L	PFC/537M
Perfluorononanoic acid (PFNA)	1.4	J	0.94	4.2	ng/L	PFC/537M
Perfluorodecanoic acid (PFDA)	1.2	J	0.52	4.2	ng/L	PFC/537M
Perfluorooctane sulfonamide (FOSA)	2.4	J	0.35	4.2	ng/L	PFC/537M
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8.1		1.2	4.2	ng/L	PFC/537M
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	8.7		0.65	4.2	ng/L	PFC/537M

CLIENT ID: W18H036-02	Lab ID: K1807311-002
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Analyte	Results	Flag	MDL	MRL	Units	Method
Perfluorobutane sulfonic acid (PFBS)	5.5		0.90	4.2	ng/L	PFC/537M
Perfluorohexane sulfonic acid (PFHxS)	14		0.94	4.2	ng/L	PFC/537M
Perfluoroheptane sulfonic acid (PFHpS)	2.0	J	0.88	4.2	ng/L	PFC/537M
Perfluorooctane sulfonic acid (PFOS)	68		1.0	4.2	ng/L	PFC/537M
Perfluorobutanoic acid (PFBA)	4.1	J	2.7	8.5	ng/L	PFC/537M
Perfluoropentanoic acid (PFPeA)	5.8		1.1	4.2	ng/L	PFC/537M
Perfluorohexanoic acid (PFHxA)	12		0.92	4.2	ng/L	PFC/537M
Perfluoroheptanoic acid (PFHpA)	4.0	J	1.2	4.2	ng/L	PFC/537M
Perfluorooctanoic acid (PFOA)	14		0.46	1.7	ng/L	PFC/537M
Perfluorononanoic acid (PFNA)	3.2	J	0.94	4.2	ng/L	PFC/537M
Perfluorodecanoic acid (PFDA)	0.78	J	0.52	4.2	ng/L	PFC/537M

CLIENT ID: W18H036-03	Lab ID: K1807311-003
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Analyte	Results	Flag	MDL	MRL	Units	Method
Perfluorobutane sulfonic acid (PFBS)	76		0.90	4.2	ng/L	PFC/537M
Perfluorohexane sulfonic acid (PFHxS)	630		9.4	42	ng/L	PFC/537M
Perfluoroheptane sulfonic acid (PFHpS)	42		0.88	4.2	ng/L	PFC/537M
Perfluorooctane sulfonic acid (PFOS)	1600		10	42	ng/L	PFC/537M
Perfluorobutanoic acid (PFBA)	42		2.7	8.5	ng/L	PFC/537M
Perfluoropentanoic acid (PFPeA)	100		1.1	4.2	ng/L	PFC/537M
Perfluorohexanoic acid (PFHxA)	230		0.92	4.2	ng/L	PFC/537M
Perfluoroheptanoic acid (PFHpA)	48		1.2	4.2	ng/L	PFC/537M
Perfluorooctanoic acid (PFOA)	74		0.46	1.7	ng/L	PFC/537M
Perfluorononanoic acid (PFNA)	3.4	J	0.94	4.2	ng/L	PFC/537M
Perfluorodecanoic acid (PFDA)	1.9	J	0.52	4.2	ng/L	PFC/537M

SAMPLE DETECTION SUMMARY

CLIENT ID: W18H036-03	Lab ID: K1807311-003
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Analyte	Results	Flag	MDL	MRL	Units	Method
Perfluorooctane sulfonamide (FOSA)	4.4		0.35	4.2	ng/L	PFC/537M
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	190		1.2	4.2	ng/L	PFC/537M
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	41		0.65	4.2	ng/L	PFC/537M

CLIENT ID: W18H036-04	Lab ID: K1807311-004
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Analyte	Results	Flag	MDL	MRL	Units	Method
Perfluorobutane sulfonic acid (PFBS)	4.5		0.90	4.4	ng/L	PFC/537M
Perfluorohexane sulfonic acid (PFHxS)	6.6		0.94	4.4	ng/L	PFC/537M
Perfluoroheptane sulfonic acid (PFHpS)	0.91	J	0.88	4.4	ng/L	PFC/537M
Perfluorooctane sulfonic acid (PFOS)	31		1.0	4.4	ng/L	PFC/537M
Perfluorobutanoic acid (PFBA)	3.3	J	2.7	8.8	ng/L	PFC/537M
Perfluoropentanoic acid (PFPeA)	4.9		1.1	4.4	ng/L	PFC/537M
Perfluorohexanoic acid (PFHxA)	7.2		0.92	4.4	ng/L	PFC/537M
Perfluoroheptanoic acid (PFHpA)	3.8	J	1.2	4.4	ng/L	PFC/537M
Perfluorooctanoic acid (PFOA)	12		0.46	1.8	ng/L	PFC/537M
Perfluorodecanoic acid (PFDA)	0.68	J	0.52	4.4	ng/L	PFC/537M

CLIENT ID: W18H036-05	Lab ID: K1807311-005
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Analyte	Results	Flag	MDL	MRL	Units	Method
Perfluorobutane sulfonic acid (PFBS)	78		0.90	4.2	ng/L	PFC/537M
Perfluorohexane sulfonic acid (PFHxS)	660		9.4	42	ng/L	PFC/537M
Perfluoroheptane sulfonic acid (PFHpS)	42		0.88	4.2	ng/L	PFC/537M
Perfluorooctane sulfonic acid (PFOS)	1500		10	42	ng/L	PFC/537M
Perfluorobutanoic acid (PFBA)	44		2.7	8.5	ng/L	PFC/537M
Perfluoropentanoic acid (PFPeA)	110		1.1	4.2	ng/L	PFC/537M
Perfluorohexanoic acid (PFHxA)	260		0.92	4.2	ng/L	PFC/537M
Perfluoroheptanoic acid (PFHpA)	50		1.2	4.2	ng/L	PFC/537M
Perfluorooctanoic acid (PFOA)	73		0.46	1.7	ng/L	PFC/537M
Perfluorononanoic acid (PFNA)	2.4	J	0.94	4.2	ng/L	PFC/537M
Perfluorodecanoic acid (PFDA)	1.8	J	0.52	4.2	ng/L	PFC/537M
Perfluorooctane sulfonamide (FOSA)	4.1	J	0.35	4.2	ng/L	PFC/537M
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	190		1.2	4.2	ng/L	PFC/537M
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39		0.65	4.2	ng/L	PFC/537M



Sample Receipt Information

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Client: Portland, City of
Project: Fire Station 2/W18H036

Service Request:K1807311

SAMPLE CROSS-REFERENCE

<u>SAMPLE #</u>	<u>CLIENT SAMPLE ID</u>	<u>DATE</u>	<u>TIME</u>
K1807311-001	W18H036-01	8/3/2018	1515
K1807311-002	W18H036-02	8/3/2018	1334
K1807311-003	W18H036-03	8/3/2018	1545
K1807311-004	W18H036-04	8/3/2018	1048
K1807311-005	W18H036-05	8/3/2018	1545
K1807311-006	W18H036-07	8/3/2018	1735
K1807311-007	W18H036-08	8/3/2018	0000

SUBCONTRACT ORDER
City of Portland Water Pollution Control Lab
W18H036

K1807311

SENDING LABORATORY:

City of Portland Water Pollution Control Lab
6543 N. Burlington Ave
Portland, OR 97203
Phone: 503-823-5600
Fax: 503-823-5656
Invoice To: Charles Lytle

RECEIVING LABORATORY:

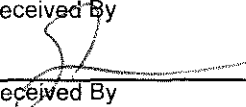
ALS Environmental
1317 S. 13th Avenue
Kelso, WA 98626
Phone : (360) 577-7222
Fax: (360) 636-1068

WPCL Project Name
Fire Station 2

TURNAROUND REQUEST

☒ Standard
☐ Rush _ day(s)


Analysis	Due	Expires	Laboratory ID	Comments
Sample ID: W18H036-01 Water Sampled: 08/03/18 15:15				
Out-PFAS	08/20/18 17:00	08/10/18 15:15		
<i>Containers Supplied:</i>				
Special (D)	Special (L)			
Sample ID: W18H036-02 Water Sampled: 08/03/18 13:34				
Out-PFAS	08/20/18 17:00	08/10/18 13:34		
<i>Containers Supplied:</i>				
Special (D)	Special (K)			
Sample ID: W18H036-03 Water Sampled: 08/03/18 15:45				
Out-PFAS	08/20/18 17:00	08/10/18 15:45		
<i>Containers Supplied:</i>				
Special (D)	Special (K)			
Sample ID: W18H036-04 Water Sampled: 08/03/18 10:48				
Out-PFAS	08/20/18 17:00	08/10/18 10:48		
<i>Containers Supplied:</i>				
Special (D)	Special (K)			
Sample ID: W18H036-05 Water Sampled: 08/03/18 15:45				
Out-PFAS	08/20/18 17:00	08/10/18 15:45		
<i>Containers Supplied:</i>				
Special (D)	Special (K)			

Released By	Date	Received By	Date
			8/6/18 1300
Released By	Date	Received By	Date

SUBCONTRACT ORDER
City of Portland Water Pollution Control Lab
W18H036

K1807311

Analysis	Due	Expires	Laboratory ID	Comments
<hr/>				
Sample ID: W18H036-07	Water	Sampled:08/03/18 17:35		
Out-PFAS	08/20/18 17:00	08/10/18 17:35		
Containers Supplied:				
Special (E)	Special (F)			
<hr/>				
Sample ID: W18H036-08	Water	Sampled:08/03/18 00:00		
Out-PFAS	08/20/18 17:00	08/10/18 00:00		
Containers Supplied:				
Special (A)				
<hr/>				

Released By	Date	Received By	Date
			8/6/18 1300
Released By	Date	Received By	Date

PC H2

Cooler Receipt and Preservation Form

07311

Client Portland Service Request K18
Received: 8/6/18 Opened: 8/6/18 By: A Unloaded: 8/6/18 By: A

1. Samples were received via? USPS Fed Ex UPS DHL PDX Courier Hand Delivered
2. Samples were received in: (circle) Cooler Box Envelope Other NA
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
- If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID	Tracking Number	NA	Filed
4.7	4.9	—	—	+0.2	325				
4.2	4.2	—	—	0	356				

4. Packing material: Inserts Baggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Were samples received in good condition (temperature, unbroken)? Indicate in the table below. NA Y N
- If applicable, tissue samples were received: Frozen Partially Thawed Thawed
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? Indicate major discrepancies in the table on page 2. NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below NA Y N
11. Were VOA vials received without headspace? Indicate in the table below. NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count	Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____



Miscellaneous Forms

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- p The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjllabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdwlabservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/analyte is offered by that state.

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

ALS Group USA, Corp.

dba ALS Environmental

Analyst Summary report

Client: Portland, City of
Project: Fire Station 2/W18H036

Service Request: K1807311

Sample Name: W18H036-01
Lab Code: K1807311-001
Sample Matrix: Water

Date Collected: 08/3/18
Date Received: 08/6/18

Analysis Method
PFC/537M

Extracted/Digested By
NHILLIKER

Analyzed By
CMULLER

Sample Name: W18H036-02
Lab Code: K1807311-002
Sample Matrix: Water

Date Collected: 08/3/18
Date Received: 08/6/18

Analysis Method
PFC/537M

Extracted/Digested By
NHILLIKER

Analyzed By
CMULLER

Sample Name: W18H036-03
Lab Code: K1807311-003
Sample Matrix: Water

Date Collected: 08/3/18
Date Received: 08/6/18

Analysis Method
PFC/537M

Extracted/Digested By
NHILLIKER

Analyzed By
CMULLER

Sample Name: W18H036-04
Lab Code: K1807311-004
Sample Matrix: Water

Date Collected: 08/3/18
Date Received: 08/6/18

Analysis Method
PFC/537M

Extracted/Digested By
NHILLIKER

Analyzed By
CMULLER

Sample Name: W18H036-05
Lab Code: K1807311-005
Sample Matrix: Water

Date Collected: 08/3/18
Date Received: 08/6/18

Analysis Method
PFC/537M

Extracted/Digested By
NHILLIKER

Analyzed By
CMULLER

ALS Group USA, Corp.

dba ALS Environmental

Analyst Summary report

Client: Portland, City of
Project: Fire Station 2/W18H036

Service Request: K1807311

Sample Name: W18H036-07
Lab Code: K1807311-006
Sample Matrix: Water

Date Collected: 08/3/18
Date Received: 08/6/18

Analysis Method
PFC/537M

Extracted/Digested By
NHILLIKER

Analyzed By
CMULLER

Sample Name: W18H036-08
Lab Code: K1807311-007
Sample Matrix: Water

Date Collected: 08/3/18
Date Received: 08/6/18

Analysis Method
PFC/537M

Extracted/Digested By
NHILLIKER

Analyzed By
CMULLER



Sample Results

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com



High Performance Liquid Chromatography

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Portland, City of
Project: Fire Station 2/W18H036
Sample Matrix: Water

Service Request: K1807311
Date Collected: 08/03/18 15:15
Date Received: 08/06/18 13:00

Sample Name: W18H036-01
Lab Code: K1807311-001

Units: ng/L
Basis: NA

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3535A

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluoroalkane Sulfonic Acids							
Perfluorobutane sulfonic acid (PFBS)	12	4.2	0.90	1	08/13/18 22:54	8/9/18	
Perfluorohexane sulfonic acid (PFHxS)	70	4.2	0.94	1	08/13/18 22:54	8/9/18	
Perfluoroheptane sulfonic acid (PFHpS)	3.9 J	4.2	0.88	1	08/13/18 22:54	8/9/18	
Perfluorooctane sulfonic acid (PFOS)	160	4.2	1.0	1	08/13/18 22:54	8/9/18	
Perfluorodecane sulfonic acid (PFDS)	ND U	4.2	1.3	1	08/13/18 22:54	8/9/18	
Perfluoroalkane Carboxylic Acids							
Perfluorobutanoic acid (PFBA)	6.0 J	8.5	2.7	1	08/13/18 22:54	8/9/18	
Perfluoropentanoic acid (PFPeA)	11	4.2	1.1	1	08/13/18 22:54	8/9/18	
Perfluorohexanoic acid (PFHxA)	26	4.2	0.92	1	08/13/18 22:54	8/9/18	
Perfluoroheptanoic acid (PFHpA)	7.9	4.2	1.2	1	08/13/18 22:54	8/9/18	
Perfluorooctanoic acid (PFOA)	18	1.7	0.46	1	08/13/18 22:54	8/9/18	
Perfluorononanoic acid (PFNA)	1.4 J	4.2	0.94	1	08/13/18 22:54	8/9/18	
Perfluorodecanoic acid (PFDA)	1.2 J	4.2	0.52	1	08/13/18 22:54	8/9/18	
Perfluoroundecanoic acid (PFUnDA)	ND U	4.2	0.31	1	08/13/18 22:54	8/9/18	
Perfluorododecanoic acid (PFDoDA)	ND U	4.2	0.46	1	08/13/18 22:54	8/9/18	
Perfluorotridecanoic acid (PFTTrDA)	ND U	4.2	0.75	1	08/13/18 22:54	8/9/18	
Perfluorotetradecanoic acid (PFTeDA)	ND U	4.2	1.2	1	08/13/18 22:54	8/9/18	
Perfluoroalkyl Sulfonamides							
Perfluorooctane sulfonamide (FOSA)	2.4 J	4.2	0.35	1	08/13/18 22:54	8/9/18	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	ND U	4.2	0.91	1	08/13/18 22:54	8/9/18	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	ND U	4.2	0.69	1	08/13/18 22:54	8/9/18	
N-Methyl perfluorooctane sulfonamidoethanol	ND U	4.2	0.55	1	08/13/18 22:54	8/9/18	
N-Ethyl perfluorooctane sulfonamidoethanol	ND U	4.2	0.75	1	08/13/18 22:54	8/9/18	
(n:2) Fluorotelomer Sulfonic Acids							
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8.1	4.2	1.2	1	08/13/18 22:54	8/9/18	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	8.7	4.2	0.65	1	08/13/18 22:54	8/9/18	

ALS Group USA, Corp.
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Analytical Report

Client: Portland, City of
Project: Fire Station 2/W18H036
Sample Matrix: Water

Service Request: K1807311
Date Collected: 08/03/18 15:15
Date Received: 08/06/18 13:00

Sample Name: W18H036-01
Lab Code: K1807311-001

Units: ng/L
Basis: NA

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3535A

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
13C3-PFBS	76	10 - 122	08/13/18 22:54	
18O2-PFHxS	85	26 - 144	08/13/18 22:54	
13C4-PFOS	73	27 - 142	08/13/18 22:54	
13C4-PFBA	69	37 - 151	08/13/18 22:54	
13C5-PFPeA	80	23 - 154	08/13/18 22:54	
13C2-PFHxA	67	27 - 155	08/13/18 22:54	
13C4-PFHpA	89	20 - 153	08/13/18 22:54	
13C4-PFOA	93	31 - 142	08/13/18 22:54	
13C5-PFNA	81	27 - 146	08/13/18 22:54	
13C2-PFDA	77	22 - 155	08/13/18 22:54	
13C2-PFUnDA	90	26 - 138	08/13/18 22:54	
13C2-PFDoDA	87	24 - 131	08/13/18 22:54	
13C2-PFTeDA	93	16 - 136	08/13/18 22:54	
13C8-FOSA	80	19 - 123	08/13/18 22:54	
D5-EtFOSA	64	10 - 102	08/13/18 22:54	
D7-MeFOSE	84	17 - 121	08/13/18 22:54	
D9-EtFOSE	78	15 - 127	08/13/18 22:54	
13C2-6:2 FTS	74	10 - 173	08/13/18 22:54	
13C2-8:2 FTS	78	10 - 190	08/13/18 22:54	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Portland, City of
Project: Fire Station 2/W18H036
Sample Matrix: Water

Service Request: K1807311
Date Collected: 08/03/18 13:34
Date Received: 08/06/18 13:00

Sample Name: W18H036-02
Lab Code: K1807311-002

Units: ng/L
Basis: NA

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3535A

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluoroalkane Sulfonic Acids							
Perfluorobutane sulfonic acid (PFBS)	5.5	4.2	0.90	1	08/13/18 23:04	8/9/18	
Perfluorohexane sulfonic acid (PFHxS)	14	4.2	0.94	1	08/13/18 23:04	8/9/18	
Perfluoroheptane sulfonic acid (PFHpS)	2.0 J	4.2	0.88	1	08/13/18 23:04	8/9/18	
Perfluorooctane sulfonic acid (PFOS)	68	4.2	1.0	1	08/13/18 23:04	8/9/18	
Perfluorodecane sulfonic acid (PFDS)	ND U	4.2	1.3	1	08/13/18 23:04	8/9/18	
Perfluoroalkane Carboxylic Acids							
Perfluorobutanoic acid (PFBA)	4.1 J	8.5	2.7	1	08/13/18 23:04	8/9/18	
Perfluoropentanoic acid (PFPeA)	5.8	4.2	1.1	1	08/13/18 23:04	8/9/18	
Perfluorohexanoic acid (PFHxA)	12	4.2	0.92	1	08/13/18 23:04	8/9/18	
Perfluoroheptanoic acid (PFHpA)	4.0 J	4.2	1.2	1	08/13/18 23:04	8/9/18	
Perfluorooctanoic acid (PFOA)	14	1.7	0.46	1	08/13/18 23:04	8/9/18	
Perfluorononanoic acid (PFNA)	3.2 J	4.2	0.94	1	08/13/18 23:04	8/9/18	
Perfluorodecanoic acid (PFDA)	0.78 J	4.2	0.52	1	08/13/18 23:04	8/9/18	
Perfluoroundecanoic acid (PFUnDA)	ND U	4.2	0.31	1	08/13/18 23:04	8/9/18	
Perfluorododecanoic acid (PFDoDA)	ND U	4.2	0.46	1	08/13/18 23:04	8/9/18	
Perfluorotridecanoic acid (PFTTrDA)	ND U	4.2	0.75	1	08/13/18 23:04	8/9/18	
Perfluorotetradecanoic acid (PFTeDA)	ND U	4.2	1.2	1	08/13/18 23:04	8/9/18	
Perfluoroalkyl Sulfonamides							
Perfluorooctane sulfonamide (FOSA)	ND U	4.2	0.35	1	08/13/18 23:04	8/9/18	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	ND U	4.2	0.91	1	08/13/18 23:04	8/9/18	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	ND U	4.2	0.69	1	08/13/18 23:04	8/9/18	
N-Methyl perfluorooctane sulfonamidoethanol	ND U	4.2	0.55	1	08/13/18 23:04	8/9/18	
N-Ethyl perfluorooctane sulfonamidoethanol	ND U	4.2	0.75	1	08/13/18 23:04	8/9/18	
(n:2) Fluorotelomer Sulfonic Acids							
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	ND U	4.2	1.2	1	08/13/18 23:04	8/9/18	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	ND U	4.2	0.65	1	08/13/18 23:04	8/9/18	

ALS Group USA, Corp.
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Analytical Report

Client: Portland, City of
Project: Fire Station 2/W18H036
Sample Matrix: Water

Service Request: K1807311
Date Collected: 08/03/18 13:34
Date Received: 08/06/18 13:00

Sample Name: W18H036-02
Lab Code: K1807311-002

Units: ng/L
Basis: NA

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3535A

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
13C3-PFBS	78	10 - 122	08/13/18 23:04	
18O2-PFHxS	72	26 - 144	08/13/18 23:04	
13C4-PFOS	69	27 - 142	08/13/18 23:04	
13C4-PFBA	62	37 - 151	08/13/18 23:04	
13C5-PFPeA	81	23 - 154	08/13/18 23:04	
13C2-PFHxA	66	27 - 155	08/13/18 23:04	
13C4-PFHpA	77	20 - 153	08/13/18 23:04	
13C4-PFOA	83	31 - 142	08/13/18 23:04	
13C5-PFNA	76	27 - 146	08/13/18 23:04	
13C2-PFDA	71	22 - 155	08/13/18 23:04	
13C2-PFUnDA	80	26 - 138	08/13/18 23:04	
13C2-PFDoDA	82	24 - 131	08/13/18 23:04	
13C2-PFTeDA	94	16 - 136	08/13/18 23:04	
13C8-FOSA	78	19 - 123	08/13/18 23:04	
D5-EtFOSA	71	10 - 102	08/13/18 23:04	
D7-MeFOSE	87	17 - 121	08/13/18 23:04	
D9-EtFOSE	77	15 - 127	08/13/18 23:04	
13C2-6:2 FTS	78	10 - 173	08/13/18 23:04	
13C2-8:2 FTS	76	10 - 190	08/13/18 23:04	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Portland, City of
Project: Fire Station 2/W18H036
Sample Matrix: Water

Service Request: K1807311
Date Collected: 08/03/18 15:45
Date Received: 08/06/18 13:00

Sample Name: W18H036-03
Lab Code: K1807311-003

Units: ng/L
Basis: NA

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3535A

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluoroalkane Sulfonic Acids							
Perfluorobutane sulfonic acid (PFBS)	76	4.2	0.90	1	08/13/18 23:15	8/9/18	
Perfluorohexane sulfonic acid (PFHxS)	630	42	9.4	10	08/27/18 23:44	8/9/18	
Perfluoroheptane sulfonic acid (PFHpS)	42	4.2	0.88	1	08/13/18 23:15	8/9/18	
Perfluorooctane sulfonic acid (PFOS)	1600	42	10	10	08/27/18 23:44	8/9/18	
Perfluorodecane sulfonic acid (PFDS)	ND U	4.2	1.3	1	08/13/18 23:15	8/9/18	
Perfluoroalkane Carboxylic Acids							
Perfluorobutanoic acid (PFBA)	42	8.5	2.7	1	08/13/18 23:15	8/9/18	
Perfluoropentanoic acid (PFPeA)	100	4.2	1.1	1	08/13/18 23:15	8/9/18	
Perfluorohexanoic acid (PFHxA)	230	4.2	0.92	1	08/13/18 23:15	8/9/18	
Perfluoroheptanoic acid (PFHpA)	48	4.2	1.2	1	08/13/18 23:15	8/9/18	
Perfluorooctanoic acid (PFOA)	74	1.7	0.46	1	08/13/18 23:15	8/9/18	
Perfluorononanoic acid (PFNA)	3.4 J	4.2	0.94	1	08/13/18 23:15	8/9/18	
Perfluorodecanoic acid (PFDA)	1.9 J	4.2	0.52	1	08/13/18 23:15	8/9/18	
Perfluoroundecanoic acid (PFUnDA)	ND U	4.2	0.31	1	08/13/18 23:15	8/9/18	
Perfluorododecanoic acid (PFDoDA)	ND U	4.2	0.46	1	08/13/18 23:15	8/9/18	
Perfluorotridecanoic acid (PFTTrDA)	ND U	4.2	0.75	1	08/13/18 23:15	8/9/18	
Perfluorotetradecanoic acid (PFTeDA)	ND U	4.2	1.2	1	08/13/18 23:15	8/9/18	
Perfluoroalkyl Sulfonamides							
Perfluorooctane sulfonamide (FOSA)	4.4	4.2	0.35	1	08/13/18 23:15	8/9/18	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	ND U	4.2	0.91	1	08/13/18 23:15	8/9/18	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	ND U	4.2	0.69	1	08/13/18 23:15	8/9/18	
N-Methyl perfluorooctane sulfonamidoethanol	ND U	4.2	0.55	1	08/13/18 23:15	8/9/18	
N-Ethyl perfluorooctane sulfonamidoethanol	ND U	4.2	0.75	1	08/13/18 23:15	8/9/18	
(n:2) Fluorotelomer Sulfonic Acids							
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	190	4.2	1.2	1	08/13/18 23:15	8/9/18	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	41	4.2	0.65	1	08/13/18 23:15	8/9/18	

ALS Group USA, Corp.
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Analytical Report

Client: Portland, City of
Project: Fire Station 2/W18H036
Sample Matrix: Water

Service Request: K1807311
Date Collected: 08/03/18 15:45
Date Received: 08/06/18 13:00

Sample Name: W18H036-03
Lab Code: K1807311-003

Units: ng/L
Basis: NA

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3535A

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
13C3-PFBS	86	10 - 122	08/13/18 23:15	
18O2-PFHxS	48	26 - 144	08/27/18 23:44	
13C4-PFOS	37	27 - 142	08/27/18 23:44	
13C4-PFBA	72	37 - 151	08/13/18 23:15	
13C5-PFPeA	87	23 - 154	08/13/18 23:15	
13C2-PFHxA	81	27 - 155	08/13/18 23:15	
13C4-PFHpA	79	20 - 153	08/13/18 23:15	
13C4-PFOA	91	31 - 142	08/13/18 23:15	
13C5-PFNA	79	27 - 146	08/13/18 23:15	
13C2-PFDA	85	22 - 155	08/13/18 23:15	
13C2-PFUnDA	85	26 - 138	08/13/18 23:15	
13C2-PFDoDA	88	24 - 131	08/13/18 23:15	
13C2-PFTeDA	101	16 - 136	08/13/18 23:15	
13C8-FOSA	81	19 - 123	08/13/18 23:15	
D5-EtFOSA	75	10 - 102	08/13/18 23:15	
D7-MeFOSE	90	17 - 121	08/13/18 23:15	
D9-EtFOSE	84	15 - 127	08/13/18 23:15	
13C2-6:2 FTS	76	10 - 173	08/13/18 23:15	
13C2-8:2 FTS	76	10 - 190	08/13/18 23:15	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Portland, City of
Project: Fire Station 2/W18H036
Sample Matrix: Water

Service Request: K1807311
Date Collected: 08/03/18 10:48
Date Received: 08/06/18 13:00

Sample Name: W18H036-04
Lab Code: K1807311-004

Units: ng/L
Basis: NA

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3535A

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluoroalkane Sulfonic Acids							
Perfluorobutane sulfonic acid (PFBS)	4.5	4.4	0.90	1	08/13/18 23:25	8/9/18	
Perfluorohexane sulfonic acid (PFHxS)	6.6	4.4	0.94	1	08/13/18 23:25	8/9/18	
Perfluoroheptane sulfonic acid (PFHpS)	0.91 J	4.4	0.88	1	08/13/18 23:25	8/9/18	
Perfluorooctane sulfonic acid (PFOS)	31	4.4	1.0	1	08/13/18 23:25	8/9/18	
Perfluorodecane sulfonic acid (PFDS)	ND U	4.4	1.3	1	08/13/18 23:25	8/9/18	
Perfluoroalkane Carboxylic Acids							
Perfluorobutanoic acid (PFBA)	3.3 J	8.8	2.7	1	08/13/18 23:25	8/9/18	
Perfluoropentanoic acid (PFPeA)	4.9	4.4	1.1	1	08/13/18 23:25	8/9/18	
Perfluorohexanoic acid (PFHxA)	7.2	4.4	0.92	1	08/13/18 23:25	8/9/18	
Perfluoroheptanoic acid (PFHpA)	3.8 J	4.4	1.2	1	08/13/18 23:25	8/9/18	
Perfluorooctanoic acid (PFOA)	12	1.8	0.46	1	08/13/18 23:25	8/9/18	
Perfluorononanoic acid (PFNA)	ND U	4.4	0.94	1	08/13/18 23:25	8/9/18	
Perfluorodecanoic acid (PFDA)	0.68 J	4.4	0.52	1	08/13/18 23:25	8/9/18	
Perfluoroundecanoic acid (PFUnDA)	ND U	4.4	0.31	1	08/13/18 23:25	8/9/18	
Perfluorododecanoic acid (PFDoDA)	ND U	4.4	0.46	1	08/13/18 23:25	8/9/18	
Perfluorotridecanoic acid (PFTTrDA)	ND U	4.4	0.75	1	08/13/18 23:25	8/9/18	
Perfluorotetradecanoic acid (PFTeDA)	ND U	4.4	1.2	1	08/13/18 23:25	8/9/18	
Perfluoroalkyl Sulfonamides							
Perfluorooctane sulfonamide (FOSA)	ND U	4.4	0.35	1	08/13/18 23:25	8/9/18	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	ND U	4.4	0.91	1	08/13/18 23:25	8/9/18	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	ND U	4.4	0.69	1	08/13/18 23:25	8/9/18	
N-Methyl perfluorooctane sulfonamidoethanol	ND U	4.4	0.55	1	08/13/18 23:25	8/9/18	
N-Ethyl perfluorooctane sulfonamidoethanol	ND U	4.4	0.75	1	08/13/18 23:25	8/9/18	
(n:2) Fluorotelomer Sulfonic Acids							
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	ND U	4.4	1.2	1	08/13/18 23:25	8/9/18	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	ND U	4.4	0.65	1	08/13/18 23:25	8/9/18	

ALS Group USA, Corp.
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Analytical Report

Client: Portland, City of
Project: Fire Station 2/W18H036
Sample Matrix: Water

Service Request: K1807311
Date Collected: 08/03/18 10:48
Date Received: 08/06/18 13:00

Sample Name: W18H036-04
Lab Code: K1807311-004

Units: ng/L
Basis: NA

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3535A

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
13C3-PFBS	77	10 - 122	08/13/18 23:25	
18O2-PFHxS	82	26 - 144	08/13/18 23:25	
13C4-PFOS	73	27 - 142	08/13/18 23:25	
13C4-PFBA	64	37 - 151	08/13/18 23:25	
13C5-PFPeA	79	23 - 154	08/13/18 23:25	
13C2-PFHxA	71	27 - 155	08/13/18 23:25	
13C4-PFHpA	76	20 - 153	08/13/18 23:25	
13C4-PFOA	86	31 - 142	08/13/18 23:25	
13C5-PFNA	77	27 - 146	08/13/18 23:25	
13C2-PFDA	77	22 - 155	08/13/18 23:25	
13C2-PFUnDA	86	26 - 138	08/13/18 23:25	
13C2-PFDoDA	86	24 - 131	08/13/18 23:25	
13C2-PFTeDA	91	16 - 136	08/13/18 23:25	
13C8-FOSA	75	19 - 123	08/13/18 23:25	
D5-EtFOSA	68	10 - 102	08/13/18 23:25	
D7-MeFOSE	87	17 - 121	08/13/18 23:25	
D9-EtFOSE	77	15 - 127	08/13/18 23:25	
13C2-6:2 FTS	75	10 - 173	08/13/18 23:25	
13C2-8:2 FTS	76	10 - 190	08/13/18 23:25	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Portland, City of
Project: Fire Station 2/W18H036
Sample Matrix: Water

Service Request: K1807311
Date Collected: 08/03/18 15:45
Date Received: 08/06/18 13:00

Sample Name: W18H036-05
Lab Code: K1807311-005

Units: ng/L
Basis: NA

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3535A

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluoroalkane Sulfonic Acids							
Perfluorobutane sulfonic acid (PFBS)	78	4.2	0.90	1	08/13/18 23:36	8/9/18	
Perfluorohexane sulfonic acid (PFHxS)	660	42	9.4	10	08/27/18 23:55	8/9/18	
Perfluoroheptane sulfonic acid (PFHpS)	42	4.2	0.88	1	08/13/18 23:36	8/9/18	
Perfluorooctane sulfonic acid (PFOS)	1500	42	10	10	08/27/18 23:55	8/9/18	
Perfluorodecane sulfonic acid (PFDS)	ND U	4.2	1.3	1	08/13/18 23:36	8/9/18	
Perfluoroalkane Carboxylic Acids							
Perfluorobutanoic acid (PFBA)	44	8.5	2.7	1	08/13/18 23:36	8/9/18	
Perfluoropentanoic acid (PFPeA)	110	4.2	1.1	1	08/13/18 23:36	8/9/18	
Perfluorohexanoic acid (PFHxA)	260	4.2	0.92	1	08/13/18 23:36	8/9/18	
Perfluoroheptanoic acid (PFHpA)	50	4.2	1.2	1	08/13/18 23:36	8/9/18	
Perfluorooctanoic acid (PFOA)	73	1.7	0.46	1	08/13/18 23:36	8/9/18	
Perfluorononanoic acid (PFNA)	2.4 J	4.2	0.94	1	08/13/18 23:36	8/9/18	
Perfluorodecanoic acid (PFDA)	1.8 J	4.2	0.52	1	08/13/18 23:36	8/9/18	
Perfluoroundecanoic acid (PFUnDA)	ND U	4.2	0.31	1	08/13/18 23:36	8/9/18	
Perfluorododecanoic acid (PFDoDA)	ND U	4.2	0.46	1	08/13/18 23:36	8/9/18	
Perfluorotridecanoic acid (PFTTrDA)	ND U	4.2	0.75	1	08/13/18 23:36	8/9/18	
Perfluorotetradecanoic acid (PFTeDA)	ND U	4.2	1.2	1	08/13/18 23:36	8/9/18	
Perfluoroalkyl Sulfonamides							
Perfluorooctane sulfonamide (FOSA)	4.1 J	4.2	0.35	1	08/13/18 23:36	8/9/18	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	ND U	4.2	0.91	1	08/13/18 23:36	8/9/18	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	ND U	4.2	0.69	1	08/13/18 23:36	8/9/18	
N-Methyl perfluorooctane sulfonamidoethanol	ND U	4.2	0.55	1	08/13/18 23:36	8/9/18	
N-Ethyl perfluorooctane sulfonamidoethanol	ND U	4.2	0.75	1	08/13/18 23:36	8/9/18	
(n:2) Fluorotelomer Sulfonic Acids							
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	190	4.2	1.2	1	08/13/18 23:36	8/9/18	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39	4.2	0.65	1	08/13/18 23:36	8/9/18	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Portland, City of
Project: Fire Station 2/W18H036
Sample Matrix: Water

Service Request: K1807311
Date Collected: 08/03/18 15:45
Date Received: 08/06/18 13:00

Sample Name: W18H036-05
Lab Code: K1807311-005

Units: ng/L
Basis: NA

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3535A

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
13C3-PFBS	84	10 - 122	08/13/18 23:36	
18O2-PFHxS	58	26 - 144	08/27/18 23:55	
13C4-PFOS	47	27 - 142	08/27/18 23:55	
13C4-PFBA	67	37 - 151	08/13/18 23:36	
13C5-PFPeA	82	23 - 154	08/13/18 23:36	
13C2-PFHxA	66	27 - 155	08/13/18 23:36	
13C4-PFHpA	81	20 - 153	08/13/18 23:36	
13C4-PFOA	93	31 - 142	08/13/18 23:36	
13C5-PFNA	78	27 - 146	08/13/18 23:36	
13C2-PFDA	79	22 - 155	08/13/18 23:36	
13C2-PFUnDA	90	26 - 138	08/13/18 23:36	
13C2-PFDoDA	93	24 - 131	08/13/18 23:36	
13C2-PFTeDA	98	16 - 136	08/13/18 23:36	
13C8-FOSA	80	19 - 123	08/13/18 23:36	
D5-EtFOSA	70	10 - 102	08/13/18 23:36	
D7-MeFOSE	89	17 - 121	08/13/18 23:36	
D9-EtFOSE	79	15 - 127	08/13/18 23:36	
13C2-6:2 FTS	76	10 - 173	08/13/18 23:36	
13C2-8:2 FTS	77	10 - 190	08/13/18 23:36	

ALS Group USA, Corp.
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Analytical Report

Client: Portland, City of
Project: Fire Station 2/W18H036
Sample Matrix: Water

Service Request: K1807311
Date Collected: 08/03/18 17:35
Date Received: 08/06/18 13:00

Sample Name: W18H036-07
Lab Code: K1807311-006

Units: ng/L
Basis: NA

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3535A

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluoroalkane Sulfonic Acids							
Perfluorobutane sulfonic acid (PFBS)	ND U	4.2	0.90	1	08/13/18 23:46	8/9/18	
Perfluorohexane sulfonic acid (PFHxS)	ND U	4.2	0.94	1	08/13/18 23:46	8/9/18	
Perfluoroheptane sulfonic acid (PFHpS)	ND U	4.2	0.88	1	08/13/18 23:46	8/9/18	
Perfluorooctane sulfonic acid (PFOS)	ND U	4.2	1.0	1	08/13/18 23:46	8/9/18	
Perfluorodecane sulfonic acid (PFDS)	ND U	4.2	1.3	1	08/13/18 23:46	8/9/18	
Perfluoroalkane Carboxylic Acids							
Perfluorobutanoic acid (PFBA)	ND U	8.5	2.7	1	08/13/18 23:46	8/9/18	
Perfluoropentanoic acid (PFPeA)	ND U	4.2	1.1	1	08/13/18 23:46	8/9/18	
Perfluorohexanoic acid (PFHxA)	ND U	4.2	0.92	1	08/13/18 23:46	8/9/18	
Perfluoroheptanoic acid (PFHpA)	ND U	4.2	1.2	1	08/13/18 23:46	8/9/18	
Perfluorooctanoic acid (PFOA)	ND U	1.7	0.46	1	08/13/18 23:46	8/9/18	
Perfluorononanoic acid (PFNA)	ND U	4.2	0.94	1	08/13/18 23:46	8/9/18	
Perfluorodecanoic acid (PFDA)	ND U	4.2	0.52	1	08/13/18 23:46	8/9/18	
Perfluoroundecanoic acid (PFUnDA)	ND U	4.2	0.31	1	08/13/18 23:46	8/9/18	
Perfluorododecanoic acid (PFDoDA)	ND U	4.2	0.46	1	08/13/18 23:46	8/9/18	
Perfluorotridecanoic acid (PFTTrDA)	ND U	4.2	0.75	1	08/13/18 23:46	8/9/18	
Perfluorotetradecanoic acid (PFTeDA)	ND U	4.2	1.2	1	08/13/18 23:46	8/9/18	
Perfluoroalkyl Sulfonamides							
Perfluorooctane sulfonamide (FOSA)	ND U	4.2	0.35	1	08/13/18 23:46	8/9/18	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	ND U	4.2	0.91	1	08/13/18 23:46	8/9/18	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	ND U	4.2	0.69	1	08/13/18 23:46	8/9/18	
N-Methyl perfluorooctane sulfonamidoethanol	ND U	4.2	0.55	1	08/13/18 23:46	8/9/18	
N-Ethyl perfluorooctane sulfonamidoethanol	ND U	4.2	0.75	1	08/13/18 23:46	8/9/18	
(n:2) Fluorotelomer Sulfonic Acids							
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	ND U	4.2	1.2	1	08/13/18 23:46	8/9/18	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	ND U	4.2	0.65	1	08/13/18 23:46	8/9/18	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Portland, City of
Project: Fire Station 2/W18H036
Sample Matrix: Water

Service Request: K1807311
Date Collected: 08/03/18 17:35
Date Received: 08/06/18 13:00

Sample Name: W18H036-07
Lab Code: K1807311-006

Units: ng/L
Basis: NA

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3535A

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
13C3-PFBS	82	10 - 122	08/13/18 23:46	
18O2-PFHxS	78	26 - 144	08/13/18 23:46	
13C4-PFOS	80	27 - 142	08/13/18 23:46	
13C4-PFBA	67	37 - 151	08/13/18 23:46	
13C5-PFPeA	90	23 - 154	08/13/18 23:46	
13C2-PFHxA	73	27 - 155	08/13/18 23:46	
13C4-PFHpA	85	20 - 153	08/13/18 23:46	
13C4-PFOA	89	31 - 142	08/13/18 23:46	
13C5-PFNA	83	27 - 146	08/13/18 23:46	
13C2-PFDA	83	22 - 155	08/13/18 23:46	
13C2-PFUnDA	96	26 - 138	08/13/18 23:46	
13C2-PFDoDA	115	24 - 131	08/13/18 23:46	
13C2-PFTeDA	121	16 - 136	08/13/18 23:46	
13C8-FOSA	79	19 - 123	08/13/18 23:46	
D5-EtFOSA	80	10 - 102	08/13/18 23:46	
D7-MeFOSE	93	17 - 121	08/13/18 23:46	
D9-EtFOSE	87	15 - 127	08/13/18 23:46	
13C2-6:2 FTS	83	10 - 173	08/13/18 23:46	
13C2-8:2 FTS	90	10 - 190	08/13/18 23:46	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Portland, City of
Project: Fire Station 2/W18H036
Sample Matrix: Water

Service Request: K1807311
Date Collected: 08/03/18 00:00
Date Received: 08/06/18 13:00

Sample Name: W18H036-08
Lab Code: K1807311-007

Units: ng/L
Basis: NA

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3535A

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluoroalkane Sulfonic Acids							
Perfluorobutane sulfonic acid (PFBS)	ND U	4.2	0.90	1	08/13/18 23:57	8/9/18	
Perfluorohexane sulfonic acid (PFHxS)	ND U	4.2	0.94	1	08/13/18 23:57	8/9/18	
Perfluoroheptane sulfonic acid (PFHpS)	ND U	4.2	0.88	1	08/13/18 23:57	8/9/18	
Perfluorooctane sulfonic acid (PFOS)	ND U	4.2	1.0	1	08/13/18 23:57	8/9/18	
Perfluorodecane sulfonic acid (PFDS)	ND U	4.2	1.3	1	08/13/18 23:57	8/9/18	
Perfluoroalkane Carboxylic Acids							
Perfluorobutanoic acid (PFBA)	ND U	8.5	2.7	1	08/13/18 23:57	8/9/18	
Perfluoropentanoic acid (PFPeA)	ND U	4.2	1.1	1	08/13/18 23:57	8/9/18	
Perfluorohexanoic acid (PFHxA)	ND U	4.2	0.92	1	08/13/18 23:57	8/9/18	
Perfluoroheptanoic acid (PFHpA)	ND U	4.2	1.2	1	08/13/18 23:57	8/9/18	
Perfluorooctanoic acid (PFOA)	ND U	1.7	0.46	1	08/13/18 23:57	8/9/18	
Perfluorononanoic acid (PFNA)	ND U	4.2	0.94	1	08/13/18 23:57	8/9/18	
Perfluorodecanoic acid (PFDA)	ND U	4.2	0.52	1	08/13/18 23:57	8/9/18	
Perfluoroundecanoic acid (PFUnDA)	ND U	4.2	0.31	1	08/13/18 23:57	8/9/18	
Perfluorododecanoic acid (PFDoDA)	ND U	4.2	0.46	1	08/13/18 23:57	8/9/18	
Perfluorotridecanoic acid (PFTTrDA)	ND U	4.2	0.75	1	08/13/18 23:57	8/9/18	
Perfluorotetradecanoic acid (PFTeDA)	ND U	4.2	1.2	1	08/13/18 23:57	8/9/18	
Perfluoroalkyl Sulfonamides							
Perfluorooctane sulfonamide (FOSA)	ND U	4.2	0.35	1	08/13/18 23:57	8/9/18	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	ND U	4.2	0.91	1	08/13/18 23:57	8/9/18	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	ND U	4.2	0.69	1	08/13/18 23:57	8/9/18	
N-Methyl perfluorooctane sulfonamidoethanol	ND U	4.2	0.55	1	08/13/18 23:57	8/9/18	
N-Ethyl perfluorooctane sulfonamidoethanol	ND U	4.2	0.75	1	08/13/18 23:57	8/9/18	
(n:2) Fluorotelomer Sulfonic Acids							
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	ND U	4.2	1.2	1	08/13/18 23:57	8/9/18	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	ND U	4.2	0.65	1	08/13/18 23:57	8/9/18	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Portland, City of
Project: Fire Station 2/W18H036
Sample Matrix: Water

Service Request: K1807311
Date Collected: 08/03/18 00:00
Date Received: 08/06/18 13:00

Sample Name: W18H036-08
Lab Code: K1807311-007

Units: ng/L
Basis: NA

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3535A

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
13C3-PFBS	73	10 - 122	08/13/18 23:57	
18O2-PFHxS	76	26 - 144	08/13/18 23:57	
13C4-PFOS	72	27 - 142	08/13/18 23:57	
13C4-PFBA	61	37 - 151	08/13/18 23:57	
13C5-PFPeA	82	23 - 154	08/13/18 23:57	
13C2-PFHxA	63	27 - 155	08/13/18 23:57	
13C4-PFHpA	87	20 - 153	08/13/18 23:57	
13C4-PFOA	88	31 - 142	08/13/18 23:57	
13C5-PFNA	78	27 - 146	08/13/18 23:57	
13C2-PFDA	72	22 - 155	08/13/18 23:57	
13C2-PFUnDA	85	26 - 138	08/13/18 23:57	
13C2-PFDoDA	74	24 - 131	08/13/18 23:57	
13C2-PFTeDA	87	16 - 136	08/13/18 23:57	
13C8-FOSA	74	19 - 123	08/13/18 23:57	
D5-EtFOSA	73	10 - 102	08/13/18 23:57	
D7-MeFOSE	87	17 - 121	08/13/18 23:57	
D9-EtFOSE	80	15 - 127	08/13/18 23:57	
13C2-6:2 FTS	75	10 - 173	08/13/18 23:57	
13C2-8:2 FTS	75	10 - 190	08/13/18 23:57	



QC Summary Forms

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
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High Performance Liquid Chromatography

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Client: Portland, City of
Project: Fire Station 2/W18H036
Sample Matrix: Water

Service Request: K1807311

SURROGATE RECOVERY SUMMARY

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M

Extraction Method: EPA 3535A

Surrogate	Control Limits	W18H036-01	W18H036-02	W18H036-03
		K1807311-001	K1807311-002	K1807311-003
13C3-PFBS	10-122	76	78	86
18O2-PFHxS	26-144	85	72	48
13C4-PFOS	27-142	73	69	37
13C4-PFBA	37-151	69	62	72
13C5-PFPeA	23-154	80	81	87
13C2-PFHxA	27-155	67	66	81
13C4-PFHpA	20-153	89	77	79
13C4-PFOA	31-142	93	83	91
13C5-PFNA	27-146	81	76	79
13C2-PFDA	22-155	77	71	85
13C2-PFUnDA	26-138	90	80	85
13C2-PFDoDA	24-131	87	82	88
13C2-PFTeDA	16-136	93	94	101
13C8-FOSA	19-123	80	78	81
D5-EtFOSA	10-102	64	71	75
D7-MeFOSE	17-121	84	87	90
D9-EtFOSE	15-127	78	77	84
13C2-6:2 FTS	10-173	74	78	76
13C2-8:2 FTS	10-190	78	76	76

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with an pound (#) indicate the control criteria is not acceptable.

Client: Portland, City of
Project: Fire Station 2/W18H036
Sample Matrix: Water

Service Request: K1807311

SURROGATE RECOVERY SUMMARY

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M

Extraction Method: EPA 3535A

Surrogate	Control Limits	W18H036-04 K1807311-004	W18H036-05 K1807311-005	W18H036-07 K1807311-006
13C3-PFBS	10-122	77	84	82
18O2-PFHxS	26-144	82	58	78
13C4-PFOS	27-142	73	47	80
13C4-PFBA	37-151	64	67	67
13C5-PFPeA	23-154	79	82	90
13C2-PFHxA	27-155	71	66	73
13C4-PFHpA	20-153	76	81	85
13C4-PFOA	31-142	86	93	89
13C5-PFNA	27-146	77	78	83
13C2-PFDA	22-155	77	79	83
13C2-PFUnDA	26-138	86	90	96
13C2-PFDoDA	24-131	86	93	115
13C2-PFTeDA	16-136	91	98	121
13C8-FOSA	19-123	75	80	79
D5-EtFOSA	10-102	68	70	80
D7-MeFOSE	17-121	87	89	93
D9-EtFOSE	15-127	77	79	87
13C2-6:2 FTS	10-173	75	76	83
13C2-8:2 FTS	10-190	76	77	90

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with an pound (#) indicate the control criteria is not acceptable.

Client: Portland, City of
Project: Fire Station 2/W18H036
Sample Matrix: Water

Service Request: K1807311

SURROGATE RECOVERY SUMMARY

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M

Extraction Method: EPA 3535A

Surrogate	Control Limits	W18H036-08 K1807311-007	Method Blank KQ1810794-04	Lab Control Sample KQ1810794-03
13C3-PFBS	10-122	73	76	86
18O2-PFHxS	26-144	76	78	82
13C4-PFOS	27-142	72	78	83
13C4-PFBA	37-151	61	63	69
13C5-PFPeA	23-154	82	81	88
13C2-PFHxA	27-155	63	69	79
13C4-PFHpA	20-153	87	86	88
13C4-PFOA	31-142	88	91	96
13C5-PFNA	27-146	78	84	90
13C2-PFDA	22-155	72	82	89
13C2-PFUnDA	26-138	85	88	96
13C2-PFDoDA	24-131	74	87	95
13C2-PFTeDA	16-136	87	91	99
13C8-FOSA	19-123	74	76	86
D5-EtFOSA	10-102	73	67	77
D7-MeFOSE	17-121	87	81	95
D9-EtFOSE	15-127	80	79	85
13C2-6:2 FTS	10-173	75	83	86
13C2-8:2 FTS	10-190	75	80	88

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with an pound (#) indicate the control criteria is not acceptable.

ALS Group USA, Corp.
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Analytical Report

Client: Portland, City of
Project: Fire Station 2/W18H036
Sample Matrix: Water

Service Request: K1807311
Date Collected: NA
Date Received: NA

Sample Name: Method Blank
Lab Code: KQ1810794-04

Units: ng/L
Basis: NA

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3535A

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluoroalkane Sulfonic Acids							
Perfluorobutane sulfonic acid (PFBS)	ND U	5.0	0.90	1	08/13/18 21:30	8/9/18	
Perfluorohexane sulfonic acid (PFHxS)	ND U	5.0	0.94	1	08/13/18 21:30	8/9/18	
Perfluoroheptane sulfonic acid (PFHpS)	ND U	5.0	0.88	1	08/13/18 21:30	8/9/18	
Perfluorooctane sulfonic acid (PFOS)	ND U	5.0	1.0	1	08/13/18 21:30	8/9/18	
Perfluorodecane sulfonic acid (PFDS)	ND U	5.0	1.3	1	08/13/18 21:30	8/9/18	
Perfluoroalkane Carboxylic Acids							
Perfluorobutanoic acid (PFBA)	ND U	10	2.7	1	08/13/18 21:30	8/9/18	
Perfluoropentanoic acid (PFPeA)	ND U	5.0	1.1	1	08/13/18 21:30	8/9/18	
Perfluorohexanoic acid (PFHxA)	1.1 J	5.0	0.92	1	08/13/18 21:30	8/9/18	
Perfluoroheptanoic acid (PFHpA)	ND U	5.0	1.2	1	08/13/18 21:30	8/9/18	
Perfluorooctanoic acid (PFOA)	ND U	2.0	0.46	1	08/13/18 21:30	8/9/18	
Perfluorononanoic acid (PFNA)	ND U	5.0	0.94	1	08/13/18 21:30	8/9/18	
Perfluorodecanoic acid (PFDA)	0.67 J	5.0	0.52	1	08/13/18 21:30	8/9/18	
Perfluoroundecanoic acid (PFUnDA)	ND U	5.0	0.31	1	08/13/18 21:30	8/9/18	
Perfluorododecanoic acid (PFDoDA)	ND U	5.0	0.46	1	08/13/18 21:30	8/9/18	
Perfluorotridecanoic acid (PFTTrDA)	ND U	5.0	0.75	1	08/13/18 21:30	8/9/18	
Perfluorotetradecanoic acid (PFTeDA)	ND U	5.0	1.2	1	08/13/18 21:30	8/9/18	
Perfluoroalkyl Sulfonamides							
Perfluorooctane sulfonamide (FOSA)	ND U	5.0	0.35	1	08/13/18 21:30	8/9/18	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	ND U	5.0	0.91	1	08/13/18 21:30	8/9/18	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	ND U	5.0	0.69	1	08/13/18 21:30	8/9/18	
N-Methyl perfluorooctane sulfonamidoethanol	ND U	5.0	0.55	1	08/13/18 21:30	8/9/18	
N-Ethyl perfluorooctane sulfonamidoethanol	ND U	5.0	0.75	1	08/13/18 21:30	8/9/18	
(n:2) Fluorotelomer Sulfonic Acids							
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	ND U	5.0	1.2	1	08/13/18 21:30	8/9/18	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	ND U	5.0	0.65	1	08/13/18 21:30	8/9/18	

ALS Group USA, Corp.
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Analytical Report

Client: Portland, City of
Project: Fire Station 2/W18H036
Sample Matrix: Water

Service Request: K1807311
Date Collected: NA
Date Received: NA

Sample Name: Method Blank
Lab Code: KQ1810794-04

Units: ng/L
Basis: NA

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3535A

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
13C3-PFBS	76	10 - 122	08/13/18 21:30	
18O2-PFHxS	78	26 - 144	08/13/18 21:30	
13C4-PFOS	78	27 - 142	08/13/18 21:30	
13C4-PFBA	63	37 - 151	08/13/18 21:30	
13C5-PFPeA	81	23 - 154	08/13/18 21:30	
13C2-PFHxA	69	27 - 155	08/13/18 21:30	
13C4-PFHpA	86	20 - 153	08/13/18 21:30	
13C4-PFOA	91	31 - 142	08/13/18 21:30	
13C5-PFNA	84	27 - 146	08/13/18 21:30	
13C2-PFDA	82	22 - 155	08/13/18 21:30	
13C2-PFUnDA	88	26 - 138	08/13/18 21:30	
13C2-PFDoDA	87	24 - 131	08/13/18 21:30	
13C2-PFTeDA	91	16 - 136	08/13/18 21:30	
13C8-FOSA	76	19 - 123	08/13/18 21:30	
D5-EtFOSA	67	10 - 102	08/13/18 21:30	
D7-MeFOSE	81	17 - 121	08/13/18 21:30	
D9-EtFOSE	79	15 - 127	08/13/18 21:30	
13C2-6:2 FTS	83	10 - 173	08/13/18 21:30	
13C2-8:2 FTS	80	10 - 190	08/13/18 21:30	

Client: Portland, City of
Project: Fire Station 2/W18H036
Sample Matrix: Water

Service Request: K1807311
Date Analyzed: 08/13/18
Date Extracted: 08/09/18

Lab Control Sample Summary
Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by HPLC/MS

Analysis Method: PFC/537M
Prep Method: EPA 3535A

Units: ng/L
Basis: NA
Analysis Lot: 602292

Lab Control Sample
KQ1810794-03

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	181	152	119	39-161
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	190	154	124	39-144
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	192	160	120	42-154
N-Ethyl perfluorooctane sulfonamidoethanol	156	160	97	35-154
N-Methyl perfluorooctane sulfonamide (MeFOSA)	155	160	97	10-154
N-Methyl perfluorooctane sulfonamidoethanol	162	160	101	31-164
Perfluorobutane sulfonic acid (PFBS)	151	142	107	48-164
Perfluorobutanoic acid (PFBA)	180	160	113	47-147
Perfluorodecane sulfonic acid (PFDS)	176	154	114	35-155
Perfluorodecanoic acid (PFDA)	160	160	100	54-139
Perfluorododecanoic acid (PFDoDA)	173	160	108	51-155
Perfluoroheptane sulfonic acid (PFHpS)	197	153	129	47-156
Perfluoroheptanoic acid (PFHpA)	150	160	93	46-153
Perfluorohexane sulfonic acid (PFHxS)	151	146	103	46-145
Perfluorohexanoic acid (PFHxA)	177	160	111	44-148
Perfluorononanoic acid (PFNA)	163	160	102	47-155
Perfluorooctane sulfonamide (FOSA)	155	160	97	35-146
Perfluorooctane sulfonic acid (PFOS)	151	149	101	29-162
Perfluorooctanoic acid (PFOA)	160	160	100	52-147
Perfluoropentanoic acid (PFPeA)	137	160	86	42-160
Perfluorotetradecanoic acid (PFTeDA)	135	160	84	47-169
Perfluorotridecanoic acid (PFTrDA)	131	160	82	45-160
Perfluoroundecanoic acid (PFUnDA)	151	160	94	53-141